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WEST RIDING COUNTY COUNCIL.

EIGHTH



ANNUAL REPORT

OF THE

County Medical Officer,

1896.

Including an Abstract of the Annual Reports of the Medical
Officers of Health for the Sanitary Districts
within the Administrative County.

*Printed by order of the West Riding Sanitary Committee,
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WEST RIDING COUNTY COUNCIL.

ANNUAL REPORT OF COUNTY MEDICAL OFFICER.

For the Year 1896.

By an instruction of the West Riding Sanitary Committee, the County Medical Officer is directed to submit annually an abstract of the Annual Reports of the local Medical Officers of Health received under Section 19 of the Local Government Act, 1888, and to preface the same with an account of the work of his department during the year. In accordance with the above, I have pleasure in submitting herewith the Abstract of Annual Reports for the year 1896 (commencing at page 10), but with regard to the work of the department I am confronted with several difficulties. For example, my appointment as County Medical Officer dates only from about the middle of the year 1896, but with the aid of the office records I have endeavoured to give some account of the department's work from the beginning of the year, although an adequate summary is quite impossible, not only on account of the variety of the work but because much of it is of a kind that cannot appear conspicuously.

Conferences, etc.—One of the most important duties of the County Medical Officer is the advising on sanitary matters of any Local Authority in the County, or its officers who may require assistance. Though work of this nature is constantly being dealt with by means of correspondence, the great majority of cases are of such importance as to call for personal conference and local inspection. During the year 1896 I find that close upon 100 such consultations were given to Medical Officers and other representatives of Local Authorities within the Riding. Many of these arose with regard to questions of hospital accommodation, and measures to be adopted to arrest or stamp out threatening epidemics of disease ; others were concerned with the innumerable difficulties connected with water supply, its deficiency, contamination, or plumbo-solvent action ; others, again, had reference to questions relating to bye-laws and regulations, or to notifications of infectious disease ; while advice has also been requested as to unsound food and the safe disposal of infected carcases, *e.g.*, by anthrax.

It has also been necessary and advantageous to advise newly-appointed medical officers of health as to their duties, and to meet others in consultation to support their evidence or advice to their Authorities. Changes of medical officers of health are unfortunately of far too frequent occurrence, and I have found it advisable to remind several Authorities that a complete Annual Report is looked for, and that in case of a change of officer it is their duty to see that there is no break in the continuity of the vital statistics.

Inspections.—It has been necessary to undertake a large number of detailed investigations in all parts of the Riding, and often at long distances from home, and having reference to a very wide range of important sanitary subjects. Many have arisen in connection with consultations; some have been undertaken at the direct request of the Local Authority, while others have been the result of unsatisfactory remarks in the Annual Reports of the local medical officer of health, or have followed upon a direct complaint by some resident or person aggrieved. It is not necessary to go into further detail here, seeing that many of the principal items have been brought before the West Riding Sanitary Committee at their meetings from time to time in the General Reports of the County Medical Officer. It need only be mentioned that amongst others, questions of drainage, water supply, lead-poisoning, hospitals, disinfection, overcrowded churchyards, nuisances from smoke, unhealthy dwellings, offensive trades, sanitary condition of schools and workshops, bye-laws and regulations, etc., are almost daily brought to notice, so that it will be seen that the domain of practical sanitation is not now limited to drain-hunting, but that greater and wider efforts are being made to grasp the various influences which work prejudicially on the health of the people. It is gratifying to know by personal interviews that often the procrastination and apathy of Authorities arise largely from want of knowledge, and therefore of confidence, instead of direct antipathy to the principles of sanitation.

Sanitary Survey of the Riding.—By an instruction of the West Riding Sanitary Committee, dated 28th March, 1894, the County Medical Officer is directed to make a systematic inspection of every district in the Riding, and report the results from time to time. This enormous task is being taken up Union by Union. The first of these survey reports, dealing with the districts within the Penistone Union, was presented by my predecessor in 1895, and since then two others (Wetherby and Settle Unions) have been completed. This work necessitates many detailed and systematic inspections, and involves a large addition to the clerical work in connection with the preparation of statistics and the printing of the reports. After these reports are presented they become the subject of careful consideration by the Committee, and much correspondence, and conference with the local authorities. I am pleased to add that the results have, so far, been exceedingly encouraging, and there is no doubt whatever that when the sanitary survey of the whole Riding has been completed, a great improvement in the general sanitary condition of the County will have been achieved, which will more than repay the Committee for the strain which this work threatens to put upon them and this department.

Reports.—At each meeting of the West Riding Sanitary Committee I have presented a printed General Report, dealing with the matters arising out of my inspections and otherwise, and also comprising valuable statistical information. I have also been called upon to report formally upon numerous districts under Section 6 of the Isolation Hospitals Act 1893, and in connection with statutory complaints received from Parish Councils. Mention has already been made of the Sanitary Survey Reports and of the Annual Abstract, but in addition to these, special reports have

been compiled dealing separately with specific subjects. For example, during 1896, hospital accommodation, smoke abatement, and public scavenging each formed the subject of investigation and report.

Hospital Accommodation.—This question is engaging more and more attention, and when the record for 1897 comes to be written, it will be seen that the work under this head has been followed by much practical result. In the early part of 1896, Dr. Whitelegge presented a detailed report showing the steps taken by each Authority in the Riding to provide hospital accommodation for cases of infectious disease. Subsequently a circular letter was addressed to those authorities who were without accommodation, in order to ascertain their intentions and their views with regard to combination. The nature of their replies as summarised and reported upon by the County Medical Officer showed the necessity for the matter being vigourously taken up by the West Riding Sanitary Committee in a comprehensive manner. Accordingly, under instructions from the Committee, I specially inquired, during 1896, into the needs of no less than 48 sanitary districts, and submitted in each case a statutory report to the effect that necessity existed for the provision of isolation hospital accommodation in each of those districts. Petitions were also received from various districts under Section 4 of the Isolation Hospitals Act, 1893, and on the 8th July, 1896, the County Council held the first statutory local inquiry under this Act, and subsequently issued their first Order constituting a hospital district for the sanitary authorities within the Penistone Union. Since then, other inquiries have been held, and the Committee are busy with the consideration and working out of combined schemes for various parts of the Riding.

Smoke Abatement.—Owing to receipt of several individual complaints, the Committee decided to ascertain the position of each district with respect to this important question, and accordingly sent out in May, 1896, a circular letter to each authority in the Riding. The results, which were tabulated and reported upon by the County Medical Officer, showed that very little is being done on the part of the sanitary authorities throughout the Riding to abate the serious evil caused by the emission of black smoke from industrial premises. The Law and Parliamentary Committee were requested to endeavour to bring about an amendment of the law so as to give County Councils further powers for the prevention of nuisances from this cause, and with this view the Local Government Board have been memorialised on the matter.

Public Scavenging.—In November, I presented a report on this subject, dealing with the replies which had been received from the 54 authorities in the Riding who had not adopted public scavenging, and to whom a special circular had been addressed urging the importance of the measure in relation to the public health. It will be seen from Table III., at the end of this Abstract (column 6), that the great majority of the local authorities in the Riding have seen the advantage of assuming direct control of the scavenging of their districts; and I have the instructions of the Committee to report from time to time on the most serious cases of

default in those districts where public scavenging has not yet been adopted.

Meetings of the County Council, Committees, &c.—During the year 1896 I find that there were six meetings of the Council, eight of the Sanitary Committee, and eleven of other Committees and Sub-Committees, which were attended by the County Medical Officer.

Public Inquiries.—Besides the local inquiries held by the County Council, I have attended Home Office and Local Government Board Inquiries where questions affecting county interests have been involved, and where due notice of the inquiry was received. I find that during 1896 the Department has been represented at 18 local inquiries.

It has not regularly been the custom of the Local Government Board to give the County Council intimation in all cases of their intention to hold inquiries on sanitary matters in the West Riding, so that on more than one occasion the County Council have not been represented. At the time of writing this report the Local Government Board have intimated their willingness to forewarn the County Council as to inquiries on sewerage and sewage disposal questions, and it is to be hoped that they will accede to the renewed request of the West Riding Sanitary Committee for information with respect to all inquiries relating to sanitary questions in the Riding—notably water supplies and hospital accommodation.

The following is a list of the Inquiries held by the Local Government Board during 1896 upon sanitary matters in the West Riding, giving the results so far as they have come to my knowledge:—

Date.	Sanitary District and <i>Locality</i> .	Subject.	Amount.	Result.
2.1.96	Hebden Bridge ...	Sewage works outside district	£ —	Not sanctioned
9.1.96	Wakefield R. ... <i>Alverthorpe</i>	Sewerage (supplementary loan)	4050	Part sanctioned
15.1.96	Birstal, Birkenshaw and Drighlington	Formation of Joint Hospital District	—	District formed
26.1.96	Holmfirth ...	Sewerage and disposal	17600	Refused
30.1.96	Flockton ...	Land for outfall works	—	
12.2.96	Mytholmroyd ...	Water supply ...	1200	
14.2.96	Doncaster R. .. <i>Thurnscoe</i>	Ditto ...	?	Sanctioned
19.2.96	Settle R. ... <i>Long Preston</i>	Sewerage and disposal	3148	Sanctioned
20.2.96	Keighley Borough	Cemetery extension...	4000	

Date.	Sanitary District and <i>Locality</i> .	Subject.	Amount.	Result.
19.3.96	Todmorden Boro'	Sewerage and disposal	£ 39861	Not sanc- tioned
— 3.96	Stocksbridge ...	Provisional order for land	—	Sanctioned
21.4.96	Oxenhope and Oakworth	Inclusion in Joint Hospital District	—	Included
29.4.96	Sowerby ...	Sewerage and disposal	2500	Referred back
13.5.96	Gunthwaite - and - Ingbirchworth	Water supply ...	540	
19.5.96	Settle R. ...	Sewerage and disposal	1300	Sanctioned
17.6.96	Penistone ...	Sewerage and disposal	8200	Sanctioned
		Water supply ...	1200	
18.6.96	Thurlstone ...	Sewerage and disposal	6000	Sanctioned
26.6.96	Sedbergh R. ... <i>Dent</i>	Ditto ...	1500	Sanctioned
2.7.96	Clayton ...	Sewerage and disposal	11000	Sanctioned
9.7.96	Guisseley ...	Sewerage work ...	1000	Referred back
14.7.96	Denholme ...	Sewerage and disposal	4500	Sanctioned
10.7.96	Barnsley ...	Water supply ...	4176	
21.7.96	Morley ...	Sewage filtration, etc.	44000	Referred back
23.7.96	Monk Bretton ...	Sewerage and disposal	4500	Referred back
24.7.96	Featherstone ...	Sewerage and disposal	9000	Sanctioned
20.8.96	Keighley R. ... <i>East Morton and Morion Banks</i>	Sewerage and disposal	7500	Sanctioned
1.9.96	Wakefield R. ... <i>Bretton West</i>	To determine reason- able cost of water supply	—	
5.9.96	Skipton R. ... <i>Kettlewell and Starbotton</i>	Water supply ...	620	
8.9.96	Barnoldswick ...	Sewerage and disposal	2200	Sanctioned
		Water main extension	1000	
17.9.96	Honley ...	Appeal against County Council Boundaries Order	—	County Coun- cil Order confirmed
18.9.96	Ardsley and Monk Bretton	Ditto ...		Ditto
23.9.96	Ardsley ...	Sewerage and disposal	3300	Sanctioned
24.9.96	Rothwell ...	Extensions of sewage- works, outside district	—	
29.10.96	Horsforth ...	Sewerage and disposal	4000	Not sanctioned

Date.	Sanitary District and <i>Locality</i> .	Subject.	Amount.	Result.
7.11.96	Hemsworth ... <i>Ackworth, South Elmsall, South Hiendley, Great Houghton, and Ryhill</i>	Public scavenging ...	£ —	
12.11.96	Swinton ... Greasborough	Application to join Wath and North Rotherham Hospital combination	—	
20.11.96	Honley and South Crosland	Formation of Joint Board for Sewerage purposes	—	Board formed
24.11.96	Golcar and Linth- waite	Formation of Joint Board for Sewerage purposes	—	Application with- drawn. Joint Com- mittee since formed
25.11.96	Tong ...	Sewerage and disposal	4000	Sanctioned
11.12.96	Heckmondwike ...	Additional land at sewage works, &c.	15000	Sanctioned
16.12.96	Settle Rural ... <i>Clapham</i>	Sewerage and disposal	1800	Sanctioned
16.12.96	Settle Rural ... <i>Newby</i>	Sewerage and disposal	290	Sanctioned
30.12.96	Knottingley ...	Sewerage and disposal	13,500	
„	Ditto ...	To determine reason- able cost of water supply	—	Scale approved
31.12.96	Wombwell ...	Sewerage and disposal	13000	Part sanctioned

Parliamentary Bills.—During 1896 I had to make investigations and reports regarding four Water Bills in Parliament, either in connection with questions of compensation to streams, protection of interests of inhabitants near the gathering grounds, or the important question of the character of the water in relation to its action upon lead. With regard to the last-named subject I find, also, that prior to my appointment much valuable work was done in connection with three other Water Bills in Parliament (see Lead Poisoning).

Laboratory.—The Laboratory continues to be exceedingly useful, and affords great assistance in the many investigations and inspections where questions of polluted water supplies arise, and in enabling me to advise Medical Officers of Health on similar questions. As giving some idea of the extent to which the laboratory has been called into use, I

append the following figures showing the numbers of samples dealt with during 1896 :—

(1) Complete sanitary analyses of drinking water	...	45
(2) Special examinations of samples for lead in solution	...	425
(3) Investigations as to general ability of samples to act upon lead	... ..	39
(4) Detailed researches as to the plumbo-solvent ability of waters proposed to be impounded for public supplies		62
		<hr/> 571 <hr/>

I may here anticipate that the laboratory record for the present year (1897) will show a decided falling off when compared with the large amount of work accomplished during 1896. The explanation of this is that the increasing clerical and general work of the department has interfered with the routine and other investigations carried on in the laboratory, and it will shortly become necessary to consider the advisability of making some addition to the staff, in order that due attention may be devoted to chemical and other work. If regard is had to the trifling expense with which this branch of the department has been conducted, and to the really invaluable nature of the results accomplished, it is quite clear that any curtailing in this direction would be as uneconomical as it is undesirable.

Indeed, there are many inducements to increase the practical usefulness of the department by taking up work in this and other allied branches. It has been my intention after the transference of the work to the new County Hall, to ask the Committee to consider the advisability of undertaking some bacteriological work in assisting Medical Officers of Health in the West Riding in the diagnosis of early cases of enteric fever and diphtheria. This is a subject which has been referred to in several of the reports, and which could only be properly carried out by a central authority efficiently equipped.

Lead Poisoning.—As shown in the preceding paragraph, much attention was devoted during 1896 to the action of drinking water upon lead. The far-reaching importance of this question cannot be over-estimated, seeing that there are in the West Riding (according to the interim report on this matter issued by the Local Government Board) considerably more than 700,000 people, whose public supply of water is of such a character that multiple cases of lead-poisoning have been ascribed to it during recent years. In some districts the water is supplied for consumption without any precautions being first taken to deprive it of its dangerous characters, but, in not a few cases, the authorities have wisely adopted means to neutralize the agency (chiefly acidity), which gives the

water its lead-dissolving power. Complaints have been received that such treatment of the water before distribution is not always continuous or sufficient, and this is very unsatisfactory, because consumers relying on the treatment, are quietened by a false sense of protection from the insidious effects of lead poisoning.

The West Riding Sanitary Committee, are, however, to be congratulated on the success which they have achieved in endeavouring to safeguard the health of the consumers, satisfactory protective clauses having been obtained in no less than five West Riding Water Acts, which make it obligatory on the water company to deliver the water in such a state as to be inactive upon lead pipes. These Acts are, (1) The Barnsley Corporation Water Act, 1896, (2) The Sheffield Corporation Water Act, 1896, (3) The Huddersfield Corporation Water Act, 1896, (4) The Harrogate Water Company's Act, 1897, (5) The Harrogate Corporation (Waterworks Transfer) Act, 1897.

County Notification Summary.—These returns, commenced in 1891, continue to afford a desirable medium for the interchange of information as to the incidence and progress of infectious disease. It is my privilege to record that monthly returns are now without exception received from every district in the Riding. These are arranged in order, summarised, commented upon, and issued along with other valuable information on the 8th of each month to every Medical Officer in the County, to each member of the County Council, and to my brother County Medical Officers. During 1896, the publication has made two distinct advances in the direction of practical completeness. In the first place the medical officers of the larger towns in the Riding were invited (and willingly consented) to supply particulars of births and deaths thereby enabling me to give each month a table of comparative rates which is proving exceedingly interesting and instructive. In the second place, a page has been added giving each month a synopsis of the Special Reports relating to outbreaks of infectious disease in the Riding which are received from local medical officers under Article 16 of the General Order of the Local Government Board. Owing to the large number of reports received, only a curtailed reference can be given in the summary, though many of them are valuable examples of good work carefully conducted in attempting to combat infectious disease.

For the information which I have been able to include in the monthly Notification Summary, I am greatly indebted to the medical officers of health in the Riding, and I take this opportunity of thanking them one and all for their willing and cordial assistance in this as in all other matters.

Sale of Food and Drugs Acts.—The direction and supervision of the work of the nine County inspectors under these Acts has now been placed upon systematic lines and works with efficiency and smoothness. The number of samples taken for analysis during 1896, reached

the total of 2168 and I have advised on all cases of adulteration as they arose. The outfits of the inspectors, together with the books and accounts of the various districts, are kept under proper control, and many matters concerning the intricacies of the work are constantly receiving attention.

During 1896, the County Council decided to adopt a system of granting extra allowance to the inspectors when necessarily engaged at a distance from home. This allowance (2s. 0d. a day for inspectors and 1s. 6d. for assistants) is regulated in conjunction with their duties under the Weights and Measures Acts, and has been of great use without causing unnecessary complications or reaching an unreasonable figure.

1.—Quarterly Record of Samples taken, 1896.

DISTRICT.	INSPECTOR.	SAMPLES SENT TO ANALYST DURING 1896.				
		First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	TOTAL.
Barnsley ...	J. H. Bundy ...	38	42	47	53	180
Central ...	C. W. MacDonald ..	82	76	43	64	264
Harrogate ...	H. Gamble ...	97	80	87	60	324
Mirfield ...	H. Newbould ...	21	39	13	61	134
Pontefract ...	W. H. Wilson ...	40	62	70	34	206
Rotherham ...	J. Wilson ...	48	48	40	88	224
Shipley ...	A. Quinlan ...	48	16	30	44	138
Skipton ...	A. Randerson ...	104	107	122	125	458
Sowerby ...	W. H. S. Crabtree...	51	61	58	69	239
Total Samples taken by County Inspectors ...		529	531	510	598	2168
Police Superintendents	...	—	—	—	—	—
Local Authorities	...	110	101	58	80	349
Private Purchasers	...	—	—	—	—	—
Total Samples Analysed ...		639	632	568	678	2517

Besides the above work connected with the County Council Inspectors, arrangements have been made with a large number of the Local Authorities in the West Riding who have directed there own inspectors to take samples of milk under the supervision of the County Medical Officer for analysis at the cost of the County Council. This entails, besides the preparation of the outfits for taking such samples, the receiving and advising upon the certificates of analysis, which together form a very important division of the department. The following is a list of the

Authorities who have already taken samples of milk for analysis under this arrangement :—

Baildon	Hoyland Nether	Skipton
Brighouse	Idle	Slaithwaite
Castleford	Ilkley	Soothill Nether
Clayton West	Knaresborough	Southowram
Cleckheaton	Knottingley	Sowerby Bridge
Denholme	Meltham	Soyland
Dodworth	Methley	Springhead
Elland	Mirfield	Swinton
Emley	Monk Bretton	Thornton
Golcar	Oxenhope	Todmorden
Gomersal	Penistone	Wilsden
Greetland	Pudsey	Wombwell
Handsworth	Rawmarsh	Halifax R.
Haworth	Rothwell	Hemsworth R.
Hebden Bridge	Sandal Magna	Hunslet R.
Holmfirth	Shelf	Knaresborough R.
Honley	Shelley	Leeds R.
Horbury	Shipley	Saddleworth R.
Horsforth	Skelmanthorpe	Thorne R.

Records, Maps, etc.—There is a large amount of work which is waiting to be done under this head. The preparation of the many valuable records which ought to be in the possession of the central Sanitary Authority of a County like the West Riding, is of great importance and ought not to be delayed, but the pressure of other work has rendered it impossible to devote time to this during 1896. Apart from the innumerable circulars and the work of despatching routine forms, returns, and prints, I find that upwards of 1,200 letters were written during the year 1896 ; many of them in answer to important sanitary questions affecting districts within the Riding, and requiring very careful treatment.

Staff.—When it is remembered that the staff consists of one inspector and two clerks, it is hardly necessary to add that considerable strain has been put upon them in assisting to carry through a work so extensive in amount and range.

Abstract of Annual Reports for 1896.

It is again a pleasure to record that an Annual Report has been received from each Sanitary Authority in the Riding. I had hoped to publish this Abstract before now, but the delay has been occasioned in obtaining health reports from a few of the districts whose backwardness has counterbalanced the benefit which otherwise might have been derived from the early reception

of the great majority of the reports. I venture to express a hope that each medical officer of health will make an effort to forward his annual report to me within the prescribed period. The limit of time allowed for the preparation and presentation of annual reports to the Local Government Board is the first quarter of the succeeding year.

At the end of 1895 the number of sanitary districts in the Administrative County was 164. Since then further slight changes of boundary have been effected, and three new urban districts have come into existence (Balby-with-Hexthorpe, Darfield, and Roystone), so that there are now 167 local sanitary authorities in the Administrative County—137 urban and 30 rural. Several of the extensive rural districts have more than one medical officer of health, so that the actual number of annual reports for 1896 received and abstracted here is 171. Of this number 121 are printed, 3 are typewritten, 1 lithographed, and the remaining 46 are left in manuscript.

As would be expected there are great differences among the reports in point of completeness and interest. Several include a brief and useful sketch of the topography and geology of the district. As in former years a few reports contain a concise summary of the sanitary position and requirements of each district. Some reports consist mainly of comments on the mortality statistics, while in others retrospective tables are added, which go to increase the value of the report, but to these the statement of the Sanitary Inspector, as to work done, should be attached where possible.

The reports generally record substantial work in the direction of suppressing nuisances, and my regret in writing this Abstract has been that it is impossible, in reasonable limits, to chronicle all the good work which has been undertaken. In some of the reports, however, there are bold protests against the continuance of dangerous insanitary conditions in spite of repeated warnings to the Sanitary Authority, and many of the reports, in recording the causes of disease, tell tales which ought not to escape the notice of the Sanitary Authority.

The objects of a district report are that it should be a permanent record of the annual movements of vital statistics and of sanitary conditions, and improvements carried out or required to be carried out. It should also be accessible to every ratepayer in the district reported upon, and to attain these objects it is important that the annual reports should be printed, otherwise they receive little or no publicity, and matters of sanitary importance are overlooked or forgotten by both the Sanitary Authority and the general public. National instruction in hygiene is an essential part of our campaign against dirt and disease.

On the whole there is nothing to hazard in recording a more extensive awakening to the importance of the duties appertaining to preservation of the public health, and in assuming as a result some beneficial effect on the prevalence of disease.

The 171 reports with which this Abstract deals relate to local sanitary districts embracing an aggregate area of 1,700,783 acres, which forms the West Riding Administrative County. On paper it forms an irregular oval with the greatest length (about 94 miles) from north-west to south-east, and the average breadth at right angles to that line of about

35 miles, but if taken from Goole to Todmorden it extends over 50 miles. The West Riding lies between latitudes 53·20 and 54·25. It possesses no coast line, but abuts upon six other counties besides the North and East Ridings. It is divided irregularly into two unequal portions by the Pennine Chain. The portion to the east, equal to about four-fifths, contains the river valleys of the Nidd, the Wharfe, the Aire, and the Don, flowing to the east to empty into the Ouse and then into the Humber. The smaller portion on the west contains the beginnings of several river valleys, notably the valley of the Ribble, also the Dee and Wenning which flow to the Lune.

The diversity of the surface of the Riding is great, and includes the rugged limestones of Craven, the hilly grits of mid-west Yorkshire, the undulating surface over the coalfields, and the low marshlands of Goole. Approximately it may be stated that one-third is under cultivation, one-third is used as pasture land, while the remaining third consists of moor and mountain surfaces.

The Geology of the Riding is as varied as its configuration, and it is interesting because of its bearing on the climate, the water supply, the topography of disease, and the nature of the soil derived from the disintegration of the rocks below. Geology is really of more importance to the sanitarian than climatic conditions, which in the present state of our knowledge are permanent, while we can influence the action of the geological conditions in relation to health, as has been practically demonstrated in several parts of this country in relation to consumption. It would be impossible, with due regard to space, to enter into any detail at present. The intention is only to give so much as may so interest health officers as to cause them to consider the matter further with regard to their own district or districts in relation to the distribution of disease.

Speaking very broadly, and taking the prominent geological features from the east to the west of the Riding, we have, first, the alluvials, mixed with the Keuper and Bunter systems of new red sandstone, and occupying the area along the eastern boundary to the east of an irregular line drawn through Doncaster, Church Fenton, and Boroughbridge. Then, to the west comes a distinct band of the Permian system, made up of marls and limestones, running the whole length from north to south, and taking a medium line through Ripon, Knaresborough, Tadcaster, Fryston, and Maltby to the southern boundary. Still further to the west, and confined to more than the upper third of the boundary of the last system, we find the grits extending as far as Great Whernside and to Skipton, thence southward between the Lancashire boundary and an irregular line through Shipley to Denholme, Halifax, Huddersfield, and Bradfield. In the area thus encircled by the southward projection of the grits just referred to and the lower two-thirds of the band of permians on the east, we find included the coal measures—the lower coal measures occupying the westerly portion of the field in which we have Leeds, Bradford, Huddersfield, Penistone, and Ecclesfield, while the higher coal measures extend over the eastern portion, on which places like Garforth, Wakefield, Barnsley, Rotherham, and a large portion of Sheffield appear. In the north-west of the Riding

we find the wonderful Craven Fault, already referred to in the Sanitary Survey of the Settle Union, which makes any description without a map illustration difficult to comprehend. In this part the Yoredales (shales with beds of limestone and sandstone) are more prominent in the southern portion, the grits in the western, and the mountain limestone in the north. In this corner of the Riding are also to be seen the Silurians, composed of slate, flag, and limestone.

Climate.—Although this includes a variety of subjects, we can only refer to the following. *Temperature* is the chief feature of the climate, and in the West Riding there is no great variation if we consider altitude. The average annual temperature may be taken as $48\cdot5^{\circ}$ in the lower parts and $45\cdot0^{\circ}$ for stations exceeding 900 feet in altitude. The average daily range of temperature, that is to say, the variation between maxima and minima is about 12° to 15° in the shade and 32° to 34° directly in the sun's rays. For the whole of the Riding the variation between the mean summer and winter temperature may be approximately stated as 22° .

Winds.—With respect to prevalence the south-west and west winds hold the highest positions, the direct east wind being the least prevalent of all. The coldest winds come from the north, and the east, being from the track of the longest line overland. *Humidity* has relation to altitude and to position with regard to evaporating surfaces. The annual mean varies from 80 to 90 degrees (taking 100 to indicate complete saturation). For example, at Goole it is 88° , Pontefract 85° , Halifax 76° , Sedbergh 90° .

Rainfall to some extent determines the moisture of the soil. For the Riding as a whole the annual average rainfall is somewhere about 35 inches, but its distribution is unequal and irregular, varying from 22 inches at York to 41 at Settle; from 23 and 25 at Goole and Wakefield respectively to 32 at Huddersfield. Speaking broadly, the rainfall is much heavier in the western half of the Riding. (For further information as to rainfall see pages 74 and 85).

Throughout this Report tabular statements are resorted to as being more comprehensible and clearer for comparisons. In the appendix will be found several tables, somewhat lengthy but highly interesting, containing data which will enable any observer to study for himself the vital statistics and mortalities of any particular district.

Table I.—Displays Area, Population, Births, Deaths, etc., for each Sanitary District.

Table II.—Contains information with regard to deaths at certain ages, and from specified causes.

Table III.—Exhibits in tabular form the cases notified and isolated and also gives information with regard to those districts utilising the Adoptive Acts, and those undertaking their own scavenging.

VITAL STATISTICS.

In considering vital statistics it should be borne in mind that figures for short periods and small populations do not afford a true criterion of the health conditions of the people. The longer the period used for comparison the smaller the margin of fallacy becomes, but in taking the West Riding as a whole we are dealing with a population sufficiently large to draw instructive comparisons even for so short a period as that of one year. In small districts there are considerable fluctuations of mortality from year to year, when the crude death rate may be low, and the deaths from zymotic disease high, or *vice versa*. It is necessary also in comparing the significance of the various rates in any district with those of another to keep in mind the influence of age and sex distribution, and of occupation—factors which undoubtedly exercise an appreciable influence on the mortalities of a district.

Population.—In the absence of a more frequent enumeration of the people it becomes necessary each year to make an estimate of the population. This estimate should be as nearly accurate as possible, because it forms the basis of our statistics. A quinquennial census, which is advocated in several of the annual reports of medical officers of health in the West Riding, and desired by all sanitarians, would to a large extent overcome the present uncertainty attending the estimation of populations. Ordinarily the method of computing population is on the assumption that the rate of increase or decrease in the district remains fairly constant from one decade to another.

The Registrar General assumes, as in geometrical progression, that the same rate of increase or decrease will hold good in this as in the previous intercensal period. A fairly reliable method of checking estimates of population is to multiply the number of inhabited houses in the district, as found in the assessment books, by the average number of persons in each house as determined at the last census.

The Population of the West Riding Administrative County, estimated to the middle of 1896, amounted to 1,431,494 persons, of whom 1,091,018 were living in “urban” districts, and 340,476 in “rural” districts. This represents an increase of 19,477 upon the previous year, made up of a natural increment of 18,819 (*i.e.*, excess of births over deaths), and 584 assumed to be due to the excess of immigration over emigration. The population of each sanitary district has also been estimated to the middle of 1896, and will be found in Table I., at the end of this Report.

Births.—The Births registered in the Administrative County during the year 1896 numbered 43,504. Several of the reports do not give distinction as to sexes, but from those which do, the average proportion is—males, 53·5 per cent., females 46·5 per cent. The Birth Rate for the County was 30·4 per thousand of the population, a lower rate than 30·9 of the previous year, but higher than 29·9, the rate for 1894. In the Urban districts the rate averaged 30·0, while in the rural districts it was 31·7 per thousand. The average Birth Rate for England and Wales during 1896 was 29·7.

A glance at Table I. reveals the fact that the highest birth rates are found in mining populations, thus, in Darton the rate was 65·6, in Featherstone 54·1, Royston 48·5, and in several other mining centres the rate was over 40·0 per

thousand. On the other hand, low rates prevailed at Harrogate 16·9, Mytholmroyd 14·5, and Oakworth 14·5.

In Table "C" (a form issued by the West Riding Sanitary Committee to be filled up and attached by medical officers as a supplement to their annual reports) I ventured to ask for information with regard to illegitimacy, because of its influence on mortality as well as its bearing on social problems. The information thus afforded has, however, been very meagre, but from the figures from the 54 Authorities who have been kind enough to give the particulars it would appear that the proportion of illegitimate children to the total births in those districts was 4·2 per cent., whereas in England and Wales the percentage is about 5·0, but this proportion is declining.

Still Births—In only five instances has any information been forthcoming, simply because it cannot be obtained by the medical officers. Still births are not registered in England, but it is computed that the proportion of still births to total births generally is about 4·0 per cent., that is to say, during 1896 these so called still births in the West Riding probably numbered 1,740. Had registration been in force, as it ought to be, I cannot but think that this number would have been materially reduced, and surely the time has now arrived when this unsatisfactory state of things should be remedied.

Deaths.—The total deaths registered during 1896 amounted to 24,611, or 1638 below the number recorded in 1895. Expressed in the proportion to every thousand of the population these figures are equivalent to 17·2 for 1896 and 18·6 for 1895. Amongst those districts where sexes are differentiated in the reports, 51·8 per cent of the deaths were males, and 48·2 females. It is noteworthy that only a few of the districts exhibit high death rates, for example, Dodworth 28·1, Mexborough 26·0, and Thurlstone 25·8. The extremely low death rates of 10·7 and 11·4 were recorded for Harrogate and Ilkley respectively.

Ages at Death.—The following Table is similar to those given in previous abstracts, but it appears this year for the first time in a complete form, all the reports having furnished the requisite information without gaps.

2.—Deaths Recorded at certain Age-periods, 1896.

	Under 1 Year.	1 to 5 Years.	5 to 15 Years.	15 to 25 Years.	25 to 65 Years.	65 and upwards.	All Ages,
Urban Sanitary Dis- tricts (137)	5005	2774	833	887	5355	3847	18701
Rural Sanitary Dis- tricts (30)	1464	674	279	289	1668	1536	5910
Total Administrative County ...	6469	3448	1012	1176	7023	5383	24611

These figures help to illustrate the effect of age-constitution of a population upon mortality. Where there is an excess of inhabitants, from 5 to 25

years of age, we should expect to find, *ceteris paribus*, a lower death rate, so that a persistently high birth rate should eventually result in a declining death rate, by producing a population of persons more viable and also less prone to fatal diseases.

Infant Mortality.—The mortality of infants under one year of age was during 1896 in the proportion of 149 to every thousand births registered. The ratio in the three previous years 1895, 1894, 1893 was 163, 138 and 168 respectively. During 1896 in the urban districts the rate averaged 136 per thousand births and in the rural districts 148. The high rate of infant mortality is a prominent feature in some of the reports, notably Dodworth, Hipperholme, Honley, Liversedge, Morley, and Ravensthorpe.

This early sacrifice of life is discreditable, as it is due in a great measure to preventible causes. Too frequently we view mortality—when not experienced acutely as the result of explosion—in an apathetic and lacadaisical way. It is lamentable to notice it recorded in several reports that the causes of infantile mortality may be largely included under the head of maternal neglect. The excessive mortality amongst illegitimate children is testimony to the fact that much depends upon the amount of care bestowed upon infant life. Although some of the causes may be outside the range of sanitary administration, still it is not an argument in favour of any relaxation of energy on the part of those responsible for public health. The lines upon which improvement in this direction may be effected are :—

- (1) Improved methods of feeding those infants not breast-fed.
- (2) Greater care in avoiding exposure to cold, damp, and infectious disease.
- (3) General improvement in sanitary surroundings.
- (4) Limitation in insurance of children.

This subject has received so much attention of late, that the following opinions taken from various reports are interesting. Dr. Watts, of Dewsbury writes :—“ What is the real factor it is difficult to understand, the variations in the rate being so great. Last year for instance, the proportion was 172 per 1,000. No doubt improper and irregular feeding is one great cause, but one does not expect that this will vary year by year to any great extent; and the hope may be expressed that as the knowledge of hygiene gets more disseminated, errors of this kind will be corrected and more infants will survive.”

An interesting fact is reported by Mr. Oliver, of Clayton—“ The question of infantile mortality is closely connected with infant feeding, as it has been shown that this mortality is considerably less in countries where the mother feed their offspring at the breast. During the siege of Paris, when the general mortality of the inhabitants was doubled, that of infants fell 40 per cent simply from the fact that the mothers were compelled from force of circumstances to suckle their children, and the same thing was observed in England during the Lancashire Cotton Famine.”

Dr. Bunce, of Featherstone, argues that “ A heavy responsibility rests on the parents themselves. They marry too young—a great cause of the debility congenital and acquired. They are not sufficiently experienced in the requi-

“ments and responsibility attending marriage and the upbringing of the
“offspring, including food and clothing, and instead of furnishing a house for
“themselves crowd into somebody else’s.”

Mr. Twigg, in the Mexborough Report, comments upon the subject of infant deaths :—“The cause,” he writes, “can be seen daily in Mexborough streets and at open door ways where young children, often babies in arms, are exposed insufficiently clad on days when parents are glad to clothe themselves very warmly indeed. The cause of the convulsions, diarrhœa, and marasmus, I believe to be due to improper feeding both as regards quantity and quality. The good old fashion, and certainly the natural fashion of bringing a baby up at the breast is rapidly becoming one of the past, and substitutes such as rusks, biscuits, soaked bread, corn flour, or arrowroot used, very few trusting to cow’s milk alone, the best procurable substitute for mother’s milk.”

Mr. Knowles has very little doubt that the alarming number of such deaths at Dodworth “is due to damp and insanitary dwellings, together with want of proper care in feeding and nursing. As I mentioned in the report for 1895, out of 157 cases inquired into, 20 never used milk, and in four cases only condensed milk was used. In 77 enquiries during 1896, seven houses had no milk supply.”

Dr. Percival, in reporting to the Pontefract Rural District Council, observes that the infantile mortality is greater in the populous townships than in the rest of the district, and thinks that “this result cannot be ascribed to the mother working in factories, for as a matter of fact the mothers in the more purely agricultural districts leave their children more whilst they are engaged in field work. Whatever the exact cause may be there is no doubt that the sanitary condition of these townships ought to be put into good order, and if cleanliness and intelligent co-operation could be obtained from the inhabitants better results might be arrived at.”

Mr. Erskine Stuart, in the Annual Report for Batley, boldly gives his opinion thus :—“Surely we can do something to dispel the crass ignorance on infant feeding of the average mother who goes out to work, and banish at least ‘pobs,’ potatoes, bread, ‘caudle,’ and all narcotics, from the diet and drug sheet of the infant, who has, alas! far too often to be brought up by artificial feeding. In cases where medical men suspect narcotics administered by parents to be the direct cause of convulsions in a child who dies, they ought to withhold a certificate of death, and have the case investigated by the Coroner. There are some very heartless parents, who have not even the love of the brute creation for their offspring. These I would commend to the notice of the Society for Preventing Cruelty to Children. A great work lies before this Society in exposing the utter carelessness and cruelty displayed towards infant life by a certain class of our populations. But espionage and prosecution by the agents of this useful Association will not be sufficient to counteract this evil. We must

“ educate the masses in sanitary science, it may be in a very elementary way,
 “ but only in this direction can we make any true progress in limiting the
 “ excessive infant mortality.”

Dr. Lumsden, of Pateley Bridge, records his opinion that some of the unsuitable food given to babies is “ as much a poison to an infant’s digestion
 “ as arsenic, slow perhaps, but equally as dangerous.”

In the Whitwood Report Mr. Hillman thinks that “ there can be little
 “ doubt that this rate of infantile mortality could be much lessened were more
 “ care given to the feeding and management of infants by their parents.
 “ Most unsuitable foods are given to young infants, in many cases doubtless
 “ through ignorance, in others, it is to be feared, through utter recklessness,
 “ the results being most serious as far as mortality tables are concerned,
 “ and also in their after-effects upon those children who are fortunate enough
 “ to survive their early surroundings.”

3.—Birth Rates and Death Rates, 1896.

The two Tables which follow are based upon the Registrar General’s Reports, and compare the Administrative County with England and Wales, and with the five County Boroughs.

1896.	Total Number in Administrative County.	ANNUAL RATES PER 1000.		
		Administra- tive County.	Five County Boroughs.†	England and Wales.
Births	43,154	30·1	29·8	29·7
Deaths	24,710	17·2	18·5	17·1
DEATHS UNDER ONE YEAR OF AGE	6478	150†	164†	148†
DEATHS FROM THE PRINCIPAL ZYMOTIC DISEASES	2916	2·03	2·21	2·18
Small-Pox 	—	<i>nil</i>	0·00	0·02
Measles 	796	0·55	0·47	0·56
Scarlet Fever 	320	0·22	0·18	0·18
Diphtheria 	273	0·19	0·14	0·29
Whooping Cough 	624	0·44	0·55	0·41
Fever* 	292	0·20	0·21	0·17
Diarrhœa 	611	0·43	0·66	0·55
DEATHS FROM VIOLENCE ...	886	0·62	0·59	0·60

† Deaths of Infants, per 1,000 births.

† Bradford, Halifax, Huddersfield, Leeds, and Sheffield.

* Includes Enteric Fever, Typhus, and Simple or ill-defined continued fever.

4.—Annual Rates, 1889-96.

	1889	1890	1891	1892	1893	1894	1895	1896
Birth-rate ...	29·2	31·1	31·3	30·8	31·3	30·3	31·1	30·1
Death-rate ...	18·2	19·9	21·1	18·3	19·6	17·7	18·8	17·2
Infant Mortality ...	156	149	162	143	166	137	161	150
Zymotic Death-rate	2·4	1·7	2·0	1·68	2·63	1·45	2·22	2·03
Small Pox „ „	<i>nil</i>	<i>nil</i>	0·02	0·13	0·11	0·02	0·02	<i>Nil</i>
Measles „ „	0·56	0·27	0·59	0·26	0·43	0·27	0·34	0·55
Scarlet Fever „ „	0·46	0·30	0·21	0·22	0·20	0·19	0·18	0·22
Diphtheria „ „	0·16	0·12	0·12	0·13	0·15	0·15	0·17	0·19
Whooping C. „ „	0·45	0·28	0·39	0·41	0·24	0·37	0·22	0·44
Fever ” „ „	0·20	0·22	0·21	0·18	0·28	0·20	0·20	0·20
Dysentery „ „	0·58	0·46	0·42	0·36	1·21	0·25	1·09	0·43
Respiratory „ „	?	4·6	5·1	3·9	3·8	3·2	3·6	3·3
Phthisis „ „	?	1·8	1·6	1·4	1·5	1·3	1·4	1·3
Violence „ „	0·51	0·50	0·64	0·60	0·61	0·60	0·64	0·62

5.—Urban and Rural Statistics, 1896.

The following Table attempts to differentiate between “urban” and “rural” districts, and shows the comparative rates for 1896 :—

	Annual Rates per 1,000 of the estimated population.					Infant Mortality (Deaths under one year per 1,000 Births)
	Birth-rate.	Death-rate.	Zymotic Death-rate.	Phthisis Death-rate.	Respiratory Death-rate.	
(1) Urban Districts (137) in the West Riding ...	30·0	17·0*	2·2	1·3	3·4	153
(2) Rural Districts (30) in the West Riding ...	31·7	16·4*	1·5	1·1	3·2	136
(3) West Riding Administrative County	30·4	17·2	2·0	1·3	3·3	149

* Excluding deaths in Lunatic Asylums.

6.—Mortality according to Season.

Seasonal mortality is an important factor in considering public health, and the following table shows the death rates in the Riding for the Year

1896, and each of its Quarters compared with the rates for England and Wales.

1896.	WEST RIDING.			ENGLAND AND WALES.		
	Annual Death-Rate from ALL CAUSES.	Annual Death-Rate from principal ZYMOTIC DISEASES.	INFANT* MORTALITY.	Annual Death Rate from ALL CAUSES.	Annual Death-Rate from principal ZYMOTIC DISEASES.	INFANT* MORTALITY
First Quarter...	17·5	1·93	144	17·9	2·02	143
Second Quarter	17·4	2·13	140	16·3	2·06	124
Third Quarter..	16·0	2·38	152	16·3	2·92	178
Fourth Quarter	17·8	1·69	164	17·9	1·65	146
YEAR 1896 ...	17·2	2·03	150	17·1	2·18	148

* Proportion of deaths under one year of age, per 1,000 births.

Zymotic Diseases.—The deaths credited to the seven principal zymotic diseases numbered 2,875, being a decrease of 93 upon the previous year, and equal to a rate of 2·0 in 1896, as against 2·2 per thousand of the population in 1895. In the urban districts the death rate from this class of disease reached 2·2 per thousand and 1·5 in the rural districts.

The infectious diseases which caused the greatest mortality during 1896 were :—

	West Riding.		Urban Districts.		Rural Districts.	
Measles	...	795	...	685	...	110
Whooping Cough	...	623	...	516	...	107
Diarrhœa	...	504	...	387	...	117

In the previous year the three most fatal zymotic diseases in the West Riding were diarrhœa, measles, and enteric fever; while in 1894, whooping cough, measles, and enteric fever headed the list.

Although the incidence of and mortality from purely preventible disease claims our first attention, it must be borne in mind that much of the gross mortality from other diseases is also preventible.

Small Pox (see Tables II., III., and pages 38 and 39). Fortunately the figures for criticism under this head are not large. There were in all 19 cases which came within the knowledge of the authorities in 12 districts, as against 78 cases in nine districts during 1895. Only one case proved fatal.

Considering the present neglect of vaccination this limitation of the disease speaks well for the other precautions taken against its extension. At no period of the year did the disease cause alarm. This, together with the absence of any interference with trade interests beyond the sickness and

fatality, is consolatory, because it must be acknowledged that the increasing proportion of unvaccinated children throughout the West Riding is producing a material ready at any moment to cause widespread infection. That vaccination has verily removed the sting of this loathsome disease few will deny.

Many of the medical officers of health reiterate their complete belief in the efficacy of proper vaccination, and add expressions of regret at the laxity with which the laws relating thereto are enforced. It is astounding, considering the enormous saving of life and of personal disfigurement to be credited to vaccination, that so little public encouragement should be given. During the last few years the neglect of vaccination has been growing apace, and I am vain enough to prophesy a general prevalence, involving loss of life and poverty, similar to the painful experience at Sheffield, Warrington, and Gloucester, unless a speedy alteration takes place. The large number of the unvaccinated (see Table, page 84) are constituting a grave danger, not only in the district in which they live, but in other places to which business may daily call them. Though notification and isolation are invaluable measures, "the true palladium of safety lies in vaccination efficiently performed."

The Final Report of the Royal Commission on Vaccination which has been recently issued fully bears out the efficacy of vaccination and re-vaccination in reducing the prevalence of and mortality from small pox. The following are some of the more important conclusions arrived at by the Commission :—

1. That it diminishes the liability to be attacked by the disease.
2. That it modifies the character of the disease, and renders it (*a*) less fatal, and (*b*) of a milder or less severe type
3. That the protection it affords against the attacks of the disease is greatest during the years immediately succeeding the operation of Vaccination. It is impossible to fix with precision the length of this period of highest protection. Though not in all cases the same, if a period is to be fixed, it might, we think, fairly be said to cover in general a period of nine or ten years.
4. That after the lapse of the period of highest protective potency, the efficacy of Vaccination to protect against attack rapidly diminishes, but that it is still considerable in the next quinquennium, and possibly never altogether ceases.
5. That its power to modify the character of the disease is also greatest in the period in which its power to protect from attack is greatest, but that its power thus to modify the disease does not diminish as rapidly as its protective influence against attacks, and its efficacy during the later periods of life to modify the disease is still very considerable.
6. That re-vaccination restores the protection which lapse of time has diminished, but the evidence shows that this protection again diminishes, and that to ensure the highest degree of protection which vaccination can give the operation should be at intervals repeated.

7. That the beneficial effects of vaccination are most experienced by those in whose case it has been most thorough. We think it may fairly be concluded that where the vaccine matter is inserted in three or four places, it is more effectual than when introduced into one or two places only—and that if the vaccination marks are of an area of half a square inch, they indicate a better state of protection than if their area be at all considerably below this.

Mr. Fairclough, in the Mirfield Report, draws attention to “the neglect of vaccination which is increasing year by year in this district, and will some day lead to results which will be felt very seriously amongst us, not only by the sufferers from small pox themselves, but also by the Council through the great expense entailed in stamping out the disease.”

Dr. Percival, in his Report to the Pontefract Rural District Council, expresses himself thus:—“It seems strange that at the present day if anyone discovers a similar antidote to any disease, whether phthisis, hydrophobia, diphtheria, or any other, he should almost be looked upon as an original genius, when at the same time the one antidote which has stood the test of time and has almost obliterated from us the most loathsome and deadly disease which used to prevail, should in many instances be utterly neglected, and the power which will not permit a postman or a telegraph boy to do his work without being re-vaccinated, allows whole communities to exercise a most dangerous form of Local Option, which is occasionally attended with dire results, as at Gloucester.”

Chicken Pox (see page 39) demands attention because of the anxiety arising at times from its superficial resemblance to modified small pox. The treatment of suspicious cases, as indicated in several of the reports, should be to treat the patient as though the disease were small pox until the diagnosis is confirmed. From the figures on page 39 it appears that chicken pox was more prevalent in 1896 than in 1895. Its greatest incidence was noted in the month of March, when 19 districts were affected, and its least in August, involving six districts only. A quarantine of 18 days appears sufficient, but isolation should be maintained until all the scabs have disappeared.

Scarlet Fever (Tables II., III., and pages 38 and 39). If the same wholesome dread of small pox attached itself to this disease it would not be my regrettable duty to record the sacrifice of 317 lives in the Administrative County during 1896, equal to a rate of 0·22 per thousand of the population. The mean rate for the previous three years was 0·28. These figures do not at all represent the injury to public health, there being no less than 6,655 persons attacked by scarlet fever in the Riding during the year. With this, as in the battle field, it is not only the killed but the number of wounded that indicates the struggle. The modified type in many cases is again referred to as an important feature in the spreading of scarlet fever during 1896. It is not presumptuous to claim that notification has effected some limitation of this disease, but the success desirable will not follow until combination is obtained of our three defences against this scourge,—namely, notification, isolation, and thorough disinfection. The recurrence of multiple cases in the same house, referred to in a number of the reports, testifies to this.

The reports, however, contain ample evidence of many successful attempts in limiting the spread. Though nothing has transpired in the reports to indicate the conveyance of infection through milk supplies, Mr. Fairclough, in the Mirfield Report, writes :—“ Taking into account that we “ are scarcely ever free from this disease, that one cause lies in a great “ measure in the want of proper drainage on many of the farms, some—in “ fact, most of them—being in a primitive condition ; another dangerous “ practice is the manuring of grass land when cattle are grazing upon it or “ likely to do so soon afterwards. Again, further danger is incurred by the “ too close proximity of the middens to the farm buildings, and when these “ are cleared the stench permeates the whole of the buildings, poisoning the “ milk.” Dr. Davidson, of Hipperholme, in condemning the gossip as a means of spreading the disease, says :—“ I have myself seen mothers with “ young children of their own, sitting in infected houses and even nursing the “ infected children of other people, and heedless or ignorant of the danger “ that the germs of the disease might be carried about on their person and “ communicated in this way to their own children. It is indeed a matter of “ great difficulty, in the presence of an epidemic of this fever, to enforce proper “ precautionary measures against its spread in the face of such carelessness, “ and more especially is this so in a place where no Isolation Hospital is “ available for the treatment of the disease.”

Mr. Macdonald Swallow, of Hoylandswaine, narrates the history of an outbreak of scarlet fever on a farm in his district kindly brought to his notice by the medical attendant in the absence of notification, and credits the prompt stoppage of the milk supply with avoiding an extension of the disease. At Heckmondwike, Mr. Broughton, in recording an outbreak of 98 cases, laments the absence of an isolation hospital, and adds “ all that the Sanitary Authority “ could do was to supply disinfectants, and to give orders for any children in “ the infected houses to be kept from school.”

Mr. Spowart of Wortley (No. 2 Division) advocates early notification and removal as absolutely necessary, not only for the successful treatment of the patient, but for the good of the public. Mr. J. F. Burman, in his Wath-upon-Dearne Report, regrets having no hospital, and states that in nine instances a second case followed, and in four houses a third case occurred. Dr. J. Mitchell Wilson, in his Tadcaster Report, argues in a similar strain :—“ In one house “ there were five cases, in another four, in another three, and in six others “ there were two cases in each.”

At Silsden, Mr. F. E. Atkinson was forced to compel removal, a procedure which would do good in other districts. He writes :—“ I was reluctant “ to use compulsion in the form of a magistrate’s order to enforce removal of “ cases to the hospital at the first ; but if parents continue to refuse to allow their “ children to be taken, this will have to be done, as only by use of the hospital “ is true isolation obtained and the spread of the disease limited ; and it is “ absurd for the Council to pay its share in the temporary Joint Hospital and “ not to derive any benefit from it.”

Dr. Picken, of Rawmarsh, sets an example worthy of attention elsewhere :—“ I advised the prosecution of a parent for allowing a boy to attend school while

“suffering from scarlet fever. This was an instance of gross carelessness, as the parents ignored the advice of the medical attendant and acted contrary to printed instructions supplied by the Council. I gave evidence also in this case before the Rotherham magistrates, and the offender was convicted.”

Dr. Townsley thinks that in mining districts, as at Ardsley, “where men from different townships work at the same pit, their clothes are very apt to act as disseminators of the disease, as the clothes are generally spread to dry on the same rug which is also the playground of the children indoors.”

In his report upon the Hunslet Rural District, Mr. Buck observes that “one death occurred at Oulton, the only fatal case in the District, in a house where much overcrowding existed. One case at Woodlesford, said to be suffering from measles, was attending school until renal trouble set in, and this affords a typical instance of the manner in which the disease is spread.”

Certain fundamental axioms in many of the reports are worthy of record here :—

- (1) Scarlet fever and scarlatina are the same, and the mildest cases are infectious, even producing fatal cases.
- (2) Complications invariably follow improper nursing,
- (3) Home isolation even in large houses is often impossible or a farce, and thorough disinfection is also impossible.
- (4) Hospital isolation and treatment, with proper disinfection of clothing, etc., and of the dwelling, form the true means of prevention.

Diphtheria (Tables II., III., and pages 38, 39).—Though there is not a concurrence of opinion on the theory of direct relationship between the incidence of diphtheria and the existence of drainage defects in dwellings, and notwithstanding the increase of this disease in the face of sanitary improvements, I cannot help supporting the arguments of many reports which point to decomposition, to dampness, and to contamination of the soil with the effete products as the main factors in producing this disease, while school attendance plays an important part in its dissemination. Whatever the cause, the safe rule of procedure (as in all suspicious cases of infectious disease) is to treat all cases of prevalent ‘sore throat’ as infectious.

The coincidence of school closure with the cessation of an outbreak has been frequently noted, which seems to argue that the crowding together of children conduces to the spread of the disease as already indicated. There is no hard and fast line between diphtheria and croup, therefore the latter should be taken into account in discussing diphtheria. During the year 1896, 340 deaths were ascribed to these two diseases—176 diphtheria and 164 croup, equal to rates of 0·12 and 0·11 per thousand respectively.

Dr. Sadler, in writing upon Barnsley Borough, says :—“It is to be hoped that in the near future we shall be in a position to admit diphtheria as well as scarlet fever cases, especially as the most hopeful treatment for this disease, that by anti-toxin, requires the patients to be under such constant skilled supervision as is hardly possible in the cottages of the poor.”

Dr. J. Mitchell Wilson shows (Doncaster Rural Report) how highly infectious diphtheria is—"Fifteen cases were confined to eight houses, proving how infectious this form of disease of the throat is, and very many of those attacked die. In another parish three cases occurred in one house after the infection had been introduced there."

Mr. Twigg, in reporting upon an outbreak of diphtheria, records his inspection of some infected house property in Mexborough, in which "fearful smells" were complained of in the cellar. The smoke test was applied to the drains, with the result "that not only the infected house, but the house on the other side of the passage was also filled with smoke. On exposing the drain it was found that the main drain from the sewer was composed of right angle junction pipes with the eyes unstopped, and the down pipe of the house pushed down into the bottom of it, stopping up the way and making a foetid mass of sewage leakage, which had to get away the best way it could, sometimes into the cellar along rat-holes, which were numerous, communicating with the drain and cellar, and which no doubt accounted for the stench noticed. This main drain then ran up the passage and under the kitchen of the adjoining house, where it became a stone drain without a bottom, and finished off with the regulation stoneware trapped gullies and sink pipes duly cut off. It was in fact a whited sepulchre, but unfortunately a fatal one, for one of the patients died."

Dr. J. Mitchell Wilson comments on diphtheria at Doncaster thus:—"Last year 40 per cent. of the sufferers died, and that fact is a sufficient reason for drawing attention to anything that hinders the prevention of the disease. Badly trapped or undisconnected drains were found at several of the houses, and these defects probably helped to set up the severe form of the illness. The treatment of the disease by the anti-toxin serum has been tried in a few of the reported cases, but the hope of success by that method is chiefly among those treated in the early stages of the disease."

From my own personal experience of the use of anti-toxin I am so satisfied with results that I should consider myself wanting in my duty to the patient if I allowed a death to occur without giving the anti-toxin a chance—even though the patient appeared to be moribund. This brings me to the question of the provision of anti-toxin gratis by sanitary authorities. Precedents of this nature are not wanting, *e.g.*, free provision of vaccine lymph and diarrhoea mixture.

Typhus Fever (Tables II., III., and pages 38, 39) is a disease intimately associated with insanitary conditions within the dwelling. Happily it is now of rare occurrence. During 1896 two deaths were recorded in the Administrative County, although it would appear from Mr. F. E. Atkinson's interesting report upon the outbreak at Bentham that there were probably other deaths from typhus registered as due to influenza. He writes: "The most remarkable incident of the year in connection with zymotic disease was an outbreak of typhus fever which occurred at High Bentham in April and May. In all there were seven cases, of whom two were males and five females, varying from the age of 16 to 53 years. The disease was imported

“ from Liverpool by three girls who came to work at the Bentham mill. The
 “ girls all recovered, but the people with whom they lodged both took it and
 “ died ; and a son, who was working at Barrow, but came over to attend his
 “ mother’s funeral, also took it. Another woman who helped to nurse one of
 “ the three girls also contracted it and died. The first five cases, those of the
 “ three girls and of the two women who nursed them and subsequently died, were
 “ all reported as cases of influenza, and the deaths were returned as such,
 “ and it was not until the husband of the first woman attacked was sent to
 “ Giggleswick workhouse that the nature of his complaint was sufficiently
 “ well marked to be recognised as a case of typhus fever. This proved a
 “ typical case, and was removed to the Giggleswick Fever Hospital, where he
 “ died. The son’s case, which was the last, was removed direct to the
 “ hospital from Bentham, and made a good recovery. All infected bedding,
 “ etc., was destroyed, and infected premises thoroughly disinfected and
 “ cleansed, and there was no further spread.”

The only other mention of typhus in the reports relates to Ossett, where two cases occurred, of which Mr. Greenwood writes as follows :—“ A youth,
 “ whose place of business was in York Street, Leeds, came home ailing, and
 “ soon showed symptoms of typhus fever. The disease ran a natural course,
 “ and, after a somewhat prolonged convalescence, recovery took place. I
 “ deeply regret to have to record the melancholy fact that the youth’s mother,
 “ who had been most assiduous in her attentions to him, caught the infection
 “ and succumbed to the disease after a few days illness. Though the proof
 “ of contact with infected persons is wanting, and no evidence is obtainable
 “ as to the mode of infection, it is open to conjecture that in the first instance
 “ the disease was contracted in Leeds, where, at the time, it was rife, York
 “ Street being one in which typhus fever existed.”

Enteric Fever (Tables II., III., and pages 38, 39) is of especial interest to the sanitarian, because in outbreaks of this kind the best results of earnest efforts for their suppression can often be seen. This disease is most frequently called typhoid fever, but I prefer the above heading, and if this nomenclature were generally adopted it would prevent occasional misunderstanding. The term ‘enteric’ defines the fever to be a specific infectious disease, and it is undoubtedly fostered by insanitary conditions. Two principal means of infection are generally suspected, namely, the water supply and the drainage—the latter including the privy system. A third source may occasionally be discovered in the milk supply, while in a few of the reports causation arising from the eating of shell-fish is recorded.

The first cause—contaminated water supply—is noted in several reports, and, by the way, a lamentable illustration is now being experienced at Maidstone, in Kent. In the Annual Report for Horsforth, Dr. Nightingale deals with an outbreak which occurred there in October, 1896, and goes on to say :—
 “ On reviewing the circumstances of the outbreak, what is there in common to
 “ all or at least the majority of the cases? The milk supply and the drainage
 “ may be safely excluded. Our present system of excrement disposal cannot
 “ probably as already shown be so readily acquitted, and indeed, may be regarded
 “ as having served to spread the disease. But as regards the batch of cases,
 “ 14 in number, which occurred in the latter days of September and the first

“ half of October, there can be no doubt that the medium of infection was the water supply. The facts that these cases began within a few days of each other, that sufficient local causes were absent, that with the exceptions mentioned previously there was nothing which had been consumed by the sufferers in common except the water, that the water was found to be grossly polluted, and had admittedly been supplied unfiltered from the compensation reservoirs, the fields near which were manured with night soil, leave no doubt in my mind that the disease was acquired in this manner.”

Most of the reports conclude that defective drainage plays a chief part in the propagation of enteric fever, and it is not unnatural to do so. Some of the reports in connection with this disease refer to insanitary conditions such as the following :—Sewer gas laid on to houses by defective drainage, especially in better class houses ; the erection of the soil pipe of seamed lead inside the houses ; imperfectly laid drainage carried underneath the kitchen and keeping cellar with no attempt at ventilation ; the bath and wash-hand basin wastes passing directly into the soil pipe or into the drain.

Many of the reports contain illustrations of these methods of dissemination of the disease, of which the following are examples :—Mr. Makeig Jones connects cellar drainage at Swinton with the causation of typhoid thus :—“ The remaining eleven cases were in adjoining houses in a yard off Wath Road. Every year we have had one or two cases in this yard, and I was never able to find out a definite cause until last Autumn, when I was enquiring about one of these cases, I came across a man who told me that when these houses were built a drain had been put in under the cellar, and that the drain opened direct into the main sewer. I asked the surveyor to inspect the property, and he found out that this was the case, and also that bricks had been knocked out of the partition walls between the various cellars so as to allow of the escape of flood water. This flood water, by the way, was probably due to the damming back of the water in the drain. Notices were at once served on the owners, and they have just completed the work of putting them in better order.”

Mr. Burman, of Wath-upon-Dearne, recites several causes, as follows :—“ In four of these instances the cause of infection was able to be traced, viz., drinking from a polluted stream near Winterwell, where enteric fever was at that time prevalent, eating oysters at Cleethorpes, prolonged immersion in the canal and consequent drinking of the water, and another was infected at Askern. All these cases occurred in houses where sanitation was very good, and where the back yards, with two exceptions, were without pig-styes, and were kept in fairly good order.”

Dr. J. Mitchell Wilson records that in an outbreak of 15 cases at Micklefield, in the Tadcaster Rural District, “ infected matter had gained an entrance into a well from which the supply for drinking was obtained, not only by the householders who resided near the well, but also by children who attended the school from a distance and drank the water. No more cases of fever were reported from Micklefield after the well was closed. The control of the infection was very greatly assisted by the removal of all the cases to the Hospital, where everyone recovered.”

Dr. Hoyle, in his investigations into an outbreak of enteric fever at Barkisland, found that “the water to the farm house ran into an open channel through the fields, and hence liable to contamination from the manure, etc., placed upon the land. I recommended that the water should be piped from its origin to the farm house.”

Dr. Scatterly corroborates his previous experience at Keighley :—“About one-third of the cases were reported from houses in which defective drains were found, and in 90 per cent. there were either excreta tubs or privy-middens within a few yards of the doors. It is only repetition to say that in houses where water-carriage of excreta existed, cases of fever were conspicuously few. . . . In the last year’s report special reference was made to the epidemic nature of typhoid fever in Victoria Street, and it was thought that a water supply obviously polluted was the most probable cause of the disease. However, after this supply was disconnected, there was a recurrence of cases. This led to a more thorough inspection of the infected area, and if the cause has not been found, at least an unexpected defect in the drainage system was unearthed. An arrangement of subsoil stone drains were found running under the cellars along the whole length of the block, and into these drains the sewage from a blocked gully was discharging. This condition of things has been efficiently remedied, and, so far as known, everything has been done to render the houses free from insanitary defects.”

Mr. Ward, of Harrogate, connects enteric fever with insanitary conditions at a farm outside the borough :—“My ‘suspicions,’” he writes, “were roused in connection with the milk supply. On investigating this I found the milk came from a farm outside the borough, and I requested the dairyman to stop the supply from that source until such time as I could be assured of its quality, &c. The Medical Officer of Health for Knaresborough, in whose district the suspected farm was, ascertained for me that the milk cans were washed at that farm in water which was ‘excessively contaminated by cesspool drainage.’ The use of that water was stopped at once, and Knaresborough town’s water substituted. By these means what might have been a serious outbreak of typhoid was averted, and no other cases occurred within the Borough. One case, however, of a person who left the town who had used this milk, developed typhoid on her return to Wetherby.”

Mr. J. Pitney Aston, in the Eccleshill Report, demonstrates the causation of an outbreak as follows :—“The cases have been in immediate contiguity to the Greengates sewer, which delivers direct into the principal collecting sewage tank at Apperley Bridge. Moreover, they have been on each side of this sewer, and in a section of only a few hundred yards in length. All other probable sources, moreover, having been enquired into without a possible solution being found, it was suggested to my mind very strongly that the main sewer referred to most probably was defective somehow, and that (the dwellings in which the cases referred to have developed being on this line of sewer) the various outbreaks must be connected with the sewer in question. On testing the drains of some of these houses with rocket smoke, it was found fumes got into the cellars, and in some instances direct connections to the sewer were ascertained. Moreover, it turned out that a

“manhole just below the dwellings in question had become partially blocked, so that sewage was being retained in the sewer above this point, and the conditions described seem to me to afford a rational explanation of the outbreaks of typhoid that have occurred in this area during the last two or three years. The drainage of the properties in question has been taken in hand, and already some of the dwellings have been provided with new and watertight drains, properly ventilated and disconnected from the main sewer by adequate disconnecting chambers.”

Mr. Hillman, remarking upon the causation of Enteric Fever at Whitwood, says :—“During 1895 and January, 1896, we had ten cases of Typhoid Fever in this district, and although I pointed out at the time that this was a possible cause of the outbreak, I regret to state that the offending piggeries are still untouched.”

Mr. Kemp, of Castleford, discovered the cause of several cases which occurred there :—“One case of Typhoid Fever in Dixon’s Row, which proved fatal, was attributed by the patient to having had a bad smell at the privy. Two cases of Typhoid Fever, which occurred in Wheldon Lane, were of a mild type, and near a manhole, the sewer gas from which may have been the cause. A severe case of Relapsing Fever took place in a house where there was a direct communication from the drain to the kitchen. This was at once remedied.”

Mr. Twigg discusses Enteric Fever incidence in relation to locality, and adds :—“All the rest (26 cases) were situated in one well-defined area, including the ‘Brick Yard,’ which up to now has always borne the palm for starting our epidemics.”

Dr. J. Mitchell Wilson, in drawing attention to the occurrence of duplicate cases in several houses in the Doncaster Rural District, remarks :—“Year by year there are many Returns, which show that cases of Enteric Fever are distinctly infectious, a view that is not always held by doctors.”

Dr. Greenwood, in his Report to the Ossett Town Council, observes :—“The etiology of all the cases of Enteric Fever is shrouded in mystery. In one instance oysters are credited with being the cause, though the assumption is somewhat hypothetical. In the house where another case occurred I found faulty sanitary arrangements, although these had been carried out in recent years under the superintendence of a person whose zeal in sanitary engineering was evidently greater than his knowledge of sanitary requirements. In spite of these sanitary defects, however, the immediate cause of the attack remained unexplained.”

Measles (Tables II., III., and page 39) has been more than ordinarily epidemic during 1896, and the reports chronicle the occurrence of many outbreaks, which interfered seriously with education. The victims of this disease in the Administrative County numbered 795, adding 0·56 to the death rate. The figures for 1896 exceed any previous record, with the exception of the year 1891, when the death rate reached 0·59 per 1,000 of the population. By far the majority of the fatal cases occurred amongst the infant population.

The advisability of the compulsory notification of measles appears to receive increasing support amongst the local medical officers of health. The fact that an outbreak does not generally occur suddenly, but is preceded by sporadic cases, supports the argument that if the requisite care could be exercised, and information obtained of the earliest cases, then many young lives might be saved, and the after impairment of health and interference with education avoided.

Notwithstanding the absence of notification, which is really the basis of all our action in the prevention of infectious disease, vigorous action is recorded in the reports for many districts—schools were visited, disinfected, cleansed, and freely ventilated; and lists of absentees obtained and their homes visited, and instructions, verbal or printed, given so as to secure isolation as far as circumstances would allow, not only for the sake of the patient, which in measles is of some concern, but also for the sake of the neighbouring children.

The step taken by many medical officers of health in posting bills of precautionary measures throughout the district is a good one. These posters call attention to the fatal character of measles, especially in cold weather; to the best way of isolating cases of the disease; to the necessity of excluding visitors and neighbours, and of keeping all children in the infected house away from school; and to the advisability of having the children's clothing disinfected before returning to school.

Heretical and dangerous opinions smoulder in some minds that if an outbreak of measles occurs in summer weather it is questionable whether it is not best to let the disease "have its fling," but they forget that few patients emerge unscathed from any infectious illness. That the fatality is less in warm weather is corroborated by the West Riding figures for the four quarters of 1896, as issued by the Registrar-General:—

First Quarter	...	...	...	229 deaths
Second ,,	...	...	...	253 ,,
Third ,,	...	...	...	112 ,,
Fourth ,,	...	...	...	202 ,,

In England and Wales the death toll to this disease during 1896 was 0·56 per 1,000 of the population.

Dr. Johnstone, of Ilkley, supports not only the notification but also the isolation of measles. "Hitherto this has not been considered one of the "infectious diseases for which isolation hospitals would be required, but "experience proves that if speedily and efficiently dealt with it can be "arrested or stamped out by isolation. A case was introduced on June 8th, "another on July 3rd, and another on July 27th, and on each occasion into a "house where there existed someone susceptible to the complaint. But by "early recognition, speedy removal to our hospital, and free disinfection "of the infected premises, the spread of the disease was in every instance "arrested. The question as to whether or not measles should be 'scheduled' "as a notifiable disease is not universally settled in the affirmative, but, so "far as my experience goes, in a place like Ilkley (liable at all times, in almost

every conceivable way, to the introduction of infectious disorders) there can be little doubt that to know of the existence of any disease of this nature in the district, at the earliest possible moment, is a most evident gain to the public health."

Dr. Richardson, of Ravensthorpe, believes that "if every sanitary authority included this disease under those notifiable there is no doubt that a large number of deaths, especially among children, could be averted."

Mr. Clay, in the Soothill Nether Report, recognises the value of school attendance officers, who could render great assistance to medical officers of health if they would. He says:—"The notification should be compulsory; the school attendance officers should notify any known or suspected case of which they gain information. Members of households invaded should be excluded from school pending the production of a medical certificate."

The action taken in Ripon City by Mr. Husband was as follows:—Immediately that I became aware that there were some cases I ordered leaflets to be struck off and distributed them, especially amongst parents of children attending the elementary schools, calling attention to the seriousness of the disease, intimating that the illness should prevent anyone attending school from the infected house, and giving the necessary instructions for isolation, disinfection."

Mr. Shaw, of Liversedge, observes that "it would be a great help to the Sanitary Authorities if your Council would include measles in the list of notifiable diseases, so that we could get to know the number of cases in the district and act accordingly, as it is a well-known fact that parents send their children back to school before they are free from the disease, and so spread it amongst the other scholars." He continues:—"Care is not taken that the children do not contract this disease, which it is not necessary for them to have any more than it is for them to break their legs."

Dr. J. Mitchell Wilson, in the Tadcaster Annual Report, advocates the excellent plan of interchanging information between the School Authorities and the Health Officer. He observes, "I am not prepared to advise adding measles to the list of diseases which are notified, but some good would follow if a plan was arranged for reporting cases of measles by the Sanitary Officials and the schoolmasters and mistresses throughout the district. It would be for the benefit of the school to receive a certificate which would include all lost attendances of every child absent through this infectious disease, and more general disinfection would be required at the houses of the children."

In the Pateley Bridge Report, Dr. Lumsden notes the manner of extension, and points out that measles, "commencing in the neighbourhood of Darley, crept by degrees to Summerbridge, Dacre, Willsill, and finally to Pateley Bridge. In looking back over the history of its progress, a very interesting fact is elicited, and that is the curious way in which it followed the course of the main roads, or of greatest traffic, attacking the schools on its way. I think that the more stringent the Sanitary Authority is, the more seriously will the public regard the disease, and this will be an inestimable gain."

Whooping Cough (Tables II., III., and page 39). This disease caused 623 deaths, equal to a rate of 0·44 per 1,000 living, against an average of 425 deaths for the previous five years. The figures for 1896 exceed the mortality from this disease recorded in any year since the formation of the County Council. That whooping cough is a highly infectious and transmissible disease is observed in various reports, and the above figures furnish a tolerably strong argument that the prevention of whooping cough like that of measles is likely to prove a most arduous task for local authorities. The quarterly mortality from this disease in the West Riding as ascertained from the reports of the RegistrarGeneral was as follows :—

1896.—First Quarter	...	...	...	164 deaths.
Second „	...	...	...	210 „
Third „	...	...	...	136 „
Fourth „	...	...	...	114 „

From Table II. at the end of this Abstract it will be seen that measles and whooping cough together caused no less than 1,418 deaths in the Administrative County during 1896, equal to a rate of 1·0 per 1,000 of the population. These figures can hardly be ignored by Sanitary Authorities as the professed guardians of the public health. A serious responsibility rests, too, with parents, whose co-operation for the prevention of this disease is absolutely necessary, and even a greater responsibility, in my opinion, attaches to school authorities, who might take more thorough action for the preservation of health, and, at the same time, avoid the serious interference with education which a wide-spread epidemic involves. Little success, however, can be hoped for until absentees, on returning to school, are treated in some methodical manner before admission to the school. Notification of both measles and whooping cough is worthy of consideration, if only as an educational factor. Unfortunately, it often happens that notification is made synonymous with £ s. d.

Diarrhœa (Table II. and page 39), judging by the mortality statistics, has not been especially prevalent during 1896. It caused 504 deaths, as compared with 1558 in 1895. As noted in the Barnsley Annual Report, this diminished mortality was probably due to the cooler summer. In the first quarter of the year 59 deaths occurred, in the second quarter 94, in the third 394, and in the last 64. Striking coincidence exists between Diarrhœa and Enteric Fever in their rise and fall; and, further, the former is generally a symptom of the latter, which leads one to look for a similarity of propagation. Warmth, moisture, stagnation, and absence of direct sunlight are the chief requisites for the development of microbic life. In other words, diarrhœa, like enteric fever, is most prevalent when decomposition of animal and vegetable matter is most encouraged by favourable climatic conditions. Careless dietary is also frequently referred to in the reports as a cause of diarrhœa.

As shown in many reports, ill-flushed sewers, uncleansed gullies, dirty and uneven back yards, or offensive privies, provide, in warm weather, all the essentials for the production and dissemination of the infective organisms of diarrhœa and enteric fever.

Dr. J. Mitchell Wilson, writing of infantile deaths from diarrhœa in Goole, says :---“The causes for many deaths from diarrhœa are in the homes of the little ones, for they had not lived long enough to come much under the influence of things outside. Some part of this waste of infant life is preventible, but the means to be used are better methods of feeding and rearing children, in aid of our sanitary work.”

Mr. J. Townsley comments upon the untidy habits of the people at Ardsley. He writes :—“When we consider that diarrhœa is essentially a filth disease, no efforts should be spared in rendering its causation a negative quantity. In this direction the great desideratum is thorough drainage of the backyards, and early and complete removal of all refuse from the neighbourhood of the dwellings, especially in hot weather. Carelessness on the part of the tenants has much to do with the sodden condition of many backyards, such places being made the dumping ground of all kinds of refuse, solid and liquid, and, until the intelligence of the people rises above such conduct, so long will we be troubled with the yearly incidence of this disease. Many of the people are also very negligent in putting ashes into the privies, so that the contents are in a very liquid and consequently more putrescible condition. The more liquid the contents of the privies, the more contaminated will be the soil in their neighbourhood, and as a consequence the more liable the inhabitants to sickness and ill health.”

Dr. Castle, in discussing the causation of diarrhœa at Darfield, thinks that “the want of ventilation shafts to the sewers accounts for a good deal of this. Every roadside grating (which runs directly into the main drain) emits an abominable stench, and many of the houses are polluted by the stench coming up their sink pipes.”

Dr. Sadler, in advocating the water carriage system at Barnsley as tending to reduce the mortality from diarrhœa, says :—“From an interesting report laid before the Town Council of Sunderland it appears that the average death rate in towns where the water carriage system prevails is 2·4 per 1,000 lower than in those where privy closets preponderate; and that in particular the deaths from typhoid fever and diarrhœa are in the former about half what they are in the latter, whilst there is also an important saving in the cost of scavenging.”

Erysipelas (Tables II., III., and pages 38, 39) is credited with 50 deaths. It would appear that many of the cases arose from other causes than wounds or insanitary conditions. Thirteen cases were noted at Barnsley, while in the Batley Report Mr. J. A. Erskine Stuart makes the following remarks :—“There were no deaths, but 35 notifications. In connection with this last disease it is evidently intended to refer to erysipelas due to sanitary defects, not to a mere angry flush round a wound. These 35 notifications are practically of little good to the Sanitary Authority, except in very rare instances. Erysipelas ought to be notified only when due to some sanitary defect.”

Puerperal Fever (Table II. and pages 38, 39) does not form the subject of much reference in the reports. It is admitted that this disease is to a large extent preventible, so that the loss during 1896 of 66 lives of women is worthy of attention, though that mortality is less than 76, the average for the previous three years.

Phthisis (Tables I. and II.)—The figures relating to this disease cannot be relied upon for any degree of accuracy owing to the errors arising in connection with registration and classification. During 1896, phthisis was named as the cause of 1,835 deaths of which 1466 occurred in the urban districts, and 369 in the rural districts, equal to a rate of 1·3 per 1,000 for the Riding, 1·3 for the urban districts, and 1·1 for the rural districts. The number of deaths for the previous three years averaged 1,944.

It has been proved with tolerable certainty that amongst the factors conducing to the development of consumption, damp surroundings occupy a chief place. It is also a familiar fact frequently commented upon in many of the reports that the want of proper ventilation, so common a defect in many cottages and workshops, is an important contributory cause in the production of consumption. The disease is now undoubtedly proved to be preventible, and, as isolation is difficult or impracticable, great care should be taken to destroy the infected portion so as to remove the possibility of its drying and being inhaled by others in the shape of dust. Mr. Pitney Aston, in his valuable report to the Ecclehill Urban District Council, expresses himself thus:—“I am perfectly confident that the measures adopted by me and on my advice, as regards the prevention of phthisis, have been most successful, and if we can obtain the compulsory notification of phthisis, I am equally confident that great and permanent benefit will accrue. Permit me to observe that compulsory notification will in no way inconvenience the patients, or handicap them as to their social relations, or the earning of their livelihood in those cases in which the nature of the case permits or requires it; for of course the Infectious Disease Prevention Act will not be applied to this disease. But compulsory notification will enable us to provide all cases with systematic information, not only as to disinfection of sputa, but also as to hygienic measures, which will be sure to be of help to the patient, alike in prolonging life under more favourable conditions, and with more prospect of cure. And the education of the public which will ensue from compulsory notification will secure for us more ready disinfection and cleansing of rooms and dwellings which have been occupied by phthisis patients who have succumbed to the disease, a matter which I regard as of great importance. On the continent an anti-phthisis league obtains, and a very valuable leaflet has been drawn up by this society, containing very precise instructions in the matters I have dwelt on. In the German Imperial Health Handbook, issued under the German Government's authorization, the question is also dealt with, and a special pocket receptacle for phthisis expectoration is there figured. But the latter is a refinement which we are not likely to see catch on in our day in Ecclehill. Well ventilated living, work, and bed rooms are important here.”

Mr. Thompson, of Mytholmroyd, advises “individuals showing a strong phthisical tendency at once to leave the mills and sewing rooms, and lead an outdoor life. The sick room of a phthisical patient should have free ventilation and a thorough renewal of the contained air several times a day.”

Mr. T. B. Fairclough, of Mirfield, in one of the few reports which refer to occupation as a factor in the causation of disease, says:—“I thought it would be very instructive to pick out of the death returns the following

“ particulars, viz. : the age, occupation, and disease, and see if we can ascertain
 “ if any special employment be more injurious to life than another. I do not
 “ think that one year’s returns will by itself do much ; its value will be enhanced
 “ if carried out each year, and then comparing them. This year I will go no
 “ further than draw your attention to the occupation of those who have died
 “ from phthisis or consumption, as follows :—Coal miner, aged 19 ; colliery
 “ banksman, aged 42 ; railway engine cleaner, aged 23 ; wood sawyer, aged
 “ 37 ; wood turner, aged 39 ; farmer, aged 51 ; 2 woollen weavers (females),
 “ ages 26 and 17 ; 1 woollen weaver (male), aged 36 ; 1 dressmaker, aged 22.”

Respiratory Diseases (Tables I., II.), comprising bronchitis and inflammation of the lungs, contributed 4,773 deaths, adding 3·3 per thousand to the death rate for 1896. This is favourable when compared with previous figures. In 1895 there were registered 5,085 deaths, equal to a rate of 3·6 per 1,000.

Mr Knowles, in discussing the high death rate of 8·37 per 1,000, due to respiratory diseases at Dodworth, writes :—“ This heavy mortality points
 “ very strongly, as I mentioned in my report for 1894, to damp and
 “ insanitary dwellings, which I am sorry to say are not difficult to find, seeing
 “ that many of the Dodworth houses are built of soft porous stone, half
 “ perished with weather, and quite innocent of any pointing, some houses
 “ being more or less underground. This is more accentuated from the fact
 “ that from the end of June there were 32 deaths only, quite an average
 “ number as compared with 57 deaths in the latter half of the year, which
 “ was unusually wet, and of these 57 deaths 16 were due to chest diseases,
 “ four to phthisis, and two to influenza.”

At Wath-upon-Dearne, Mr. Burman thinks that “ many of the cases
 “ of bronchitis were made worse by the exposure of the children’s legs and
 “ feet to the damp fog. The importance of covering up the legs and feet of
 “ young children in cold weather cannot be too strongly impressed upon
 “ parents and others who have the custody of babies.” While damp houses,
 exposure to inclement weather and overcrowding, lead to respiratory mischief,
 the workroom is not free from blame. The danger to which workpeople are
 exposed in passing from overheated, overcrowded, and dusty workrooms is a
 fruitful cause of catching cold, which may early pass to bronchitis or some
 inflammatory affection of the lungs.

Influenza (Page 39).—It is satisfactory to note that this insidious and highly infectious disease has not manifested itself so widely or so fatally in the Administrative County during 1896 as in previous years. This may be partly due to the mildness of the attacks, and partly also to the better care taken of those attacked through the wholesome fear caused by the enormous loss of life in 1891 and 1893. Special reference is made to its prevalence at Barnsley, Birstal, Handsworth (where it was followed by acute rheumatism), Hebden Bridge, Hipperholme, Holme, North Bierley, Rawmarsh, Shelf, and in the rural district of Penistone, especially amongst young children. Several reports remark that although the disease itself has been milder in type, the sequelæ were more pronounced and lasting.

The following Table and Chart show the course of influenza in the West Riding as illustrated by the returns received monthly from the local medical officers of health for the purpose of the County Notification Summary :—

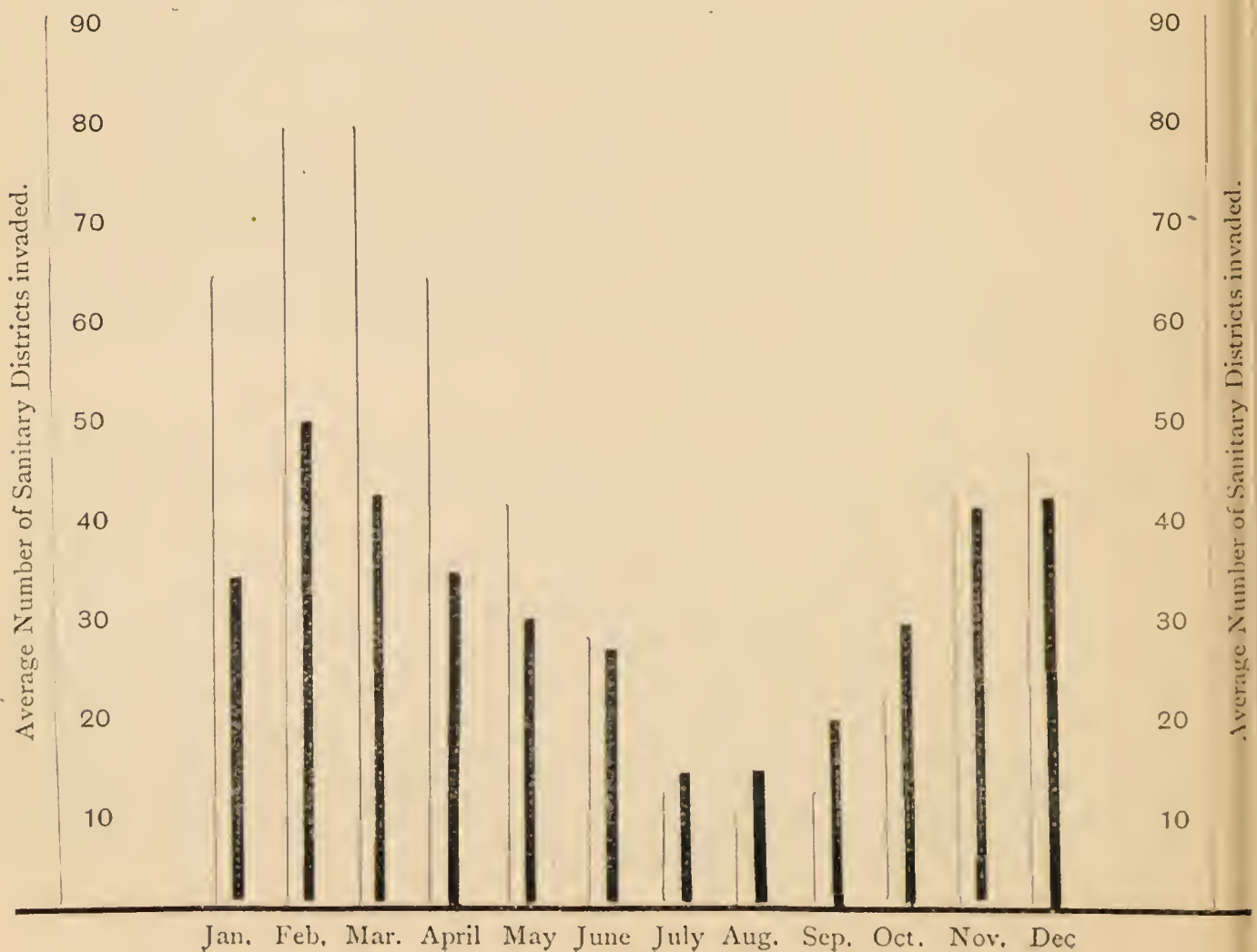
MONTHLY RECORD OF INFLUENZA IN THE WEST RIDING, 1891—96.

YEAR,	Monthly number of Districts reporting cases of Influenza,											
	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1891 ...	?	?	?	50	78	51	13	9	9	10	14	22
1892 ...	88	102	94	90	48	22	8	5	6	14	21	31
1893 ...	65	70	55	56	34	38	16	17	8	31	99	123
1894 ...	75	39	35	35	17	13	10	7	23	26	38	35
1895 ...	30	106	138	87	34	15	13	10	15	29	37	30
1896 ...	33	49	42	35	30	27	13	13	19	29	41	42
Monthly average	58	73	73	59	40	28	12	10	13	23	42	47

As recorded in one of the local reports this disease has evidently “come to stay with us.” The above figures and the graphic statement below are sufficient to show the seasonal behaviour of the disease to be fairly constant, its incidence being lowest in August and highest in the opening months of the year.

INFLUENZA IN THE WEST RIDING.

Thin columns = average of 5 years, 1891-5.
Thick columns = year 1896.



Compulsory Notification of Infectious Disease.—

Of the 167 Sanitary Authorities in the Riding 145 have adopted this insurance against the invasion of infectious disease, while 22 prefer to remain without its advantages mainly from a pecuniary standpoint which, in the end, cannot be economical either in purse or in respect to the public health. During 1896 the Infectious Disease (Notification) Act was adopted in Darfield, Denholme, Flockton, Golcar, Harrogate, Holme, Knottingley, Meltham, Netherthong, Shelf, Slaithwaite, Wilsden, and Knaresborough Rural. Not a single report contains a disparaging remark as to notification, but many add testimony to its value. Its adoption has been urged by the medical officers of health for Farnley Tyas, Guiseley, Gunthwaite, Hoylandswaine, Shelley, Skelmanthorpe.

Mr. Wellburn, in testifying to the value of compulsory notification at Sowerby Bridge, observes:—"I find the Act of great use as a means of bringing me into connection with unsanitary conditions of houses, that I should not have had reported otherwise." Dr. Cheetham, in advising the Guiseley District Council, touches upon the cost:—"Had all cases of notifiable diseases been reported during the last thirteen years, some 200 cases would have been notified at a cost of £25." Mr. Swallow urges the adoption of the Act at Hoylandswaine, and writes:—"In consequence of the absence of the notification of infectious disease in your district, I was not aware of this case (erysipelas) until I received the intimation of the death at the end of the month."

Dr. Watts records some part of his action in extending the usefulness of notification at Dewsbury. He writes:—"In every case of infectious disease notice is given to the School Board Authorities, also to the Librarian of the Public Free Library, as to where the disease exists, and on termination of the illness, when the necessary disinfection has been done, notice is given that the house is free from infection."

At South Crosland Dr. Smailes finds the Act "has been of great assistance in enquiring into the first cases of epidemic disease, and ascertaining any causes which tended to originate or spread the various diseases. It has worked without any friction between the medical men notifying and medical officer, as I am always careful not to allow my enquiries to interfere with the direct management of the case, confining my attentions to the danger of spreading the disease to others."

In some districts, immediately after the receipt of the notification of a case of infectious disease, a small advisory leaflet is addressed to the infected home which prevents parents or guardians professing ignorance as to their responsibilities in the presence of infection. At the same time a notice is sent to the school attended by the children desiring the exclusion of the scholars coming from the infected houses. Sometimes this notice may be profitably extended to apply to the whole of the children from a specified infected area.

After notification a visit should be made to the infected house by the Medical Officer of Health or Sanitary Inspector, when the latter should obtain information in all cases for permanent record in his Journal of Zymotic Disease; for notification is a means, in the absence of house-to-house

inspection, of bringing to our knowledge glaring insanitary defects. The following is an example showing how the requisite information may be collected and arranged :—

No.
 Dates of Inspection :
 Address :
 District :
 Occupier's Name :
 Patient's Name :
 Workplace or School :
 Whether removed to Hospital :
 Earliest symptoms and dates :
 Disease certified :
 By whom certified :
 Rest of { Names and Ages :
 Family { Workplaces and Schools :
 Milkman :
 Source of Water Supply :
 No. of inmates : of rooms : conditions :
 Drain- age { Sinks and Washbasins :
 { Basement drains :
 { Other drains :
 { W.C. :
 Privy { Kind :
 { Ashplaces :
 Nuisances :
 Probable sources of infection :
 Drains Flushed :
 Privy emptied :
 Ashpit emptied :
 Owner's Name :
 Age :
 Sex :
 (Standard) :
 Date of removal :
 Date of Certificate :
 Name of Medical man and date of his first visit :
 Address :
 Overflow and condition of cistern :
 sizes :
 ventilation, &c. :
 Bathrooms :
 fall spouts :
 Main Sewers :
 condition :
 distance :
 No. houses using it :
 do.
 House Disinfected :
 Notices to Schools :
 Directions sent :

The 'County Notification Summary,' commenced in 1891, is now in its seventh year of issue, and is based upon returns received monthly from every medical officer of health in the Riding. It shows month by month the number of cases of infectious sickness notified or ascertained in each sanitary district in the Riding. The two following Tables are based upon these monthly returns for the year 1896 :—

7.—Monthly Totals of Reported Cases 1896.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Small Pox ...	5	2	—	2	1	2	4	—	—	1	2	—	17
Asiatic Cholera	—	—	—	—	—	—	—	—	—	—	—	—	—
English Cholera	—	—	—	—	—	—	3	1	—	—	—	—	4
Diphtheria ...	112	82	61	43	74	51	32	60	58	61	51	45	777
Croup ...	22	22	15	14	19	14	12	11	10	18	23	19	197
Erysipelas ...	109	88	90	85	91	73	78	79	82	97	86	105	1000
Scarlet Fever ..	644	595	579	560	484	484	553	548	622	609	537	473	6666
Typhus ...	—	—	—	—	2	—	—	1	1	—	—	—	4
Enteric Fever ..	123	106	93	108	87	66	120	195	177	193	142	129	1533
Relapsing Fever	1	—	—	—	—	—	—	—	—	—	1	—	2
Continued Fever	1	6	6	2	6	5	3	—	—	6	8	5	36
Puerperal Fever	11	16	17	7	8	11	10	5	7	12	7	12	126
No. of districts* furnishing reports ...	162	162	162	162	162	163	163	163	165	166	160	164	—

* Sanitary Districts, without regard to sub-division.

8.—Monthly Totals of Districts Reporting, 1896.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Small Pox ...	4	2	—	2	1	2	2	—	—	1	1	—
Bact. Cholera...	—	—	—	—	—	—	—	—	—	—	—	—
English Cholera..	—	—	—	—	—	—	2	1	—	—	—	—
Diphtheria ..	44	30	34	28	36	30	22	36	28	26	29	29
Erysipelas ...	18	16	15	11	14	11	12	9	9	15	19	15
Scarlet Fever ...	74	83	84	75	75	80	82	94	88	89	83	86
Typhus ...	—	—	—	—	1	—	—	1	1	—	—	—
Enteric Fever ...	54	52	45	57	48	40	52	66	60	67	60	54
Relapsing Fever..	1	—	—	—	—	—	—	—	—	—	1	—
Continued Fever..	1	6	2	2	5	3	3	7	—	5	3	4
Intermittent Fever..	9	13	10	7	6	8	9	5	7	12	7	11
Measles ...	41	48	55	47	42	44	38	26	38	38	45	45
Whooping Cough	47	41	42	52	53	52	36	29	38	33	30	30
Gonorrhœa ...	11	9	11	7	11	27	55	52	29	14	13	8
Pneumonia ..	43	42	38	41	54	36	24	20	26	25	45	54
Influenza ...	33	49	42	35	30	27	13	13	19	29	41	42
Ecklen Pox ...	8	14	19	13	12	18	12	6	8	7	15	14
Scumps ...	7	12	11	10	5	7	7	2	3	10	8	10
German Measles	3	7	12	8	7	6	4	1	3	4	2	2
Food Poisoning...	5	2	4	3	3	4	7	6	3	3	4	2
Total of districts *												
Minishing reports	162	162	162	162	162	163	163	163	165	166	160	164

* Sanitary Districts, without regard to sub-division.

Isolation Hospitals.—From the Annual Reports for 1896 it is evident that there has been considerable awakening, on the part of local authorities, to the necessity for proper equipment for the isolation of persons suffering from dangerous infectious diseases. Although the records for 1896 do not include much practical outcome of this awakening, there is no doubt of its existence, and, having regard to the stimulating effect of the action of the West Riding Sanitary Committee (see page 3) it is tolerably certain that another years' reports will chronicle much actual progress.

A sanitary authority which has not provided facilities for isolation and disinfection, has clearly failed to fulfil one of the great purposes for which it was constituted. Little better can be said of an authority which, having provided accommodation, lapses into a state of apathy, and fails to see that due advantage is taken of it.

It strikes one with astonishment to read in the Morley Report :—"No case of infectious fever has been admitted into the hospital during the year." Coupled with this, we read, "none of the Acts, *i.e.*, The Infectious Disease Notification Act, the Infectious Disease Prevention Act, and the Public Health Acts Amendment Act have been adopted." Mr. Steele also continues

in the same report: "No disinfecting apparatus has as yet been erected at the hospital. There is urgent need of this, as the saving in the cost of renewing bedding ordered to be destroyed would more than cover the outlay."

It is gratifying to turn from this to the Tadcaster Rural Report, where Dr. Mitchell Wilson provides an excellent testimonial to the value of hospital treatment. He writes:—"There were 18 cases of enteric fever and all of these recovered. The success of the hospital treatment it is hoped will go far to lessen the prejudice existing against friends being removed there. The sole object of the hospital is to serve the best interests of the ratepayers and the results of the treatment of cases there show that the skilled nursing, suitable food, excellent situation, and good sanitary arrangements, in and about the hospital, have been successful in carrying a far larger proportion of the cases safely through their illness than the best of home-nursing has done."

Mr. Burman, of Wath, in comparing home treatment with hospital isolation (now being provided for the district) says:—"The value of an isolation hospital will be more self-evident in cases of scarlet fever, than perhaps in any other disease, as we shall then be able to allow a child who has contracted scarlet fever and been isolated at the hospital, to be properly nursed by a trained nurse, to have a considerable amount of liberty, and to be allowed to play during the stage of "skinning" with other children similarly placed, instead of having as at present to be shut up in a room by itself for six weeks without carpets or bed curtains, and within sound of the merry laughter of its brothers and sisters, when for five out of the six weeks the poor child feels quite well and begs and prays to be let out of its prison."

Dr. Richardson, of Ravensthorpe, indicates one of the main advantages of early hospital isolation thus:—"We generally find that the initial cases of an epidemic are of a much milder type than those of a later period, and consequently if an epidemic is cut short in its initial stage there is a great saving of life effected."

Mr. Webster, after illustrating how scarlet fever was spread at Marsden by people intermingling and visiting at each others homes, says:—"The need for Isolation Hospital accommodation for the early cases of this and kindred diseases is urgently indicated under such conditions."

In the Whitwood Report Mr. Hillman states that the want of hospital accommodation there "was largely responsible for the number of cases of scarlet fever which have occurred during the past year. In the majority of houses in which the disease has appeared, satisfactory isolation has been impossible; and so long as we have to treat infectious disease in our present primitive way so long shall we find that it will continue to be always with us."

At Balby-with-Hexthorpe, Dr. J. Mitchell Wilson experienced the difficulty which is usual in dealing with scarlet fever in the absence of means of hospital isolation. He says:—"Until the month of April, the hospital of the Rural District Council was not ready to receive patients, and therefore all the cases had to be treated at their own homes. Second, and even third

“and fourth cases of fever occurred at seven houses, as no sufficient means of isolating the patients was possible, therefore one-half of all the cases broke out in nine houses.”

In the Doncaster Report the same writer points out that “all the cases treated in the hospitals recovered. Among those nursed at home the infection naturally spread to others who were susceptible in the family, and two, three, four, and five cases were reported at intervals in the same, house. It is to be expected, and we find the infection does spread from such houses where any real separation of the sick cannot be carried out, and it is a difficult matter to keep the patient when apparently well, yet peeling and very ready to spread infection, confined to one bedroom. Two of the four deaths from scarlet fever were of adults.” Dr. Wilson adds the interesting note that the Doncaster Committee decided to recommend “that in future no charge be made to persons residing within the borough for maintenance and nursing at Carr House Hospital, but that if special accommodation is wanted a charge be then made.”

Mr. Haigh appears in favour of combination to secure an efficiently equipped hospital for the use of the Meltham Urban District. He writes:—“In the autumn you purchased a plot of ground with a building upon it for the purpose of an isolation hospital, but as yet no steps have been taken to adapt the building for such a purpose, and I am of opinion that it would be far better, and also cheaper, for a number of adjoining districts to combine and have a hospital for the whole, as then a proper staff could be kept, and the place be available at any time when it was required.”

Mr. Hislop advocates hospital provision for the Knaresborough Rural District as follows:—“It may seem that for so comparatively small a number of cases an infectious diseases hospital would be a superfluity; but we must remember that the district may not always be fortunate enough to have such a record, and the value to the district of a small infectious diseases hospital can hardly be over-estimated.”

Mr. C. Wills, in writing of the need for hospital accommodation in the Kiveton Park Rural District, sets forth some of the requirements for an efficient hospital. He observes that different diseases require distinct buildings with distinct nurses; that the site of the buildings should be one where plenty of space is available, with a dry soil, and an elevation above the valleys for the sake of air and freedom from fog. He insists upon a good supply of water, and a position favourable for drainage purposes. Another desirable thing he urges is gas or electricity, because where there is sickness you require a good and available light, easily increased or diminished. The buildings, too, he says, should be the best it is possible to get, and the Local Government Board's designs should be taken as models. He also advocates co-operation, because only by sharing the expense with others can a small district maintain efficiently and economically a proper building or buildings. It is encouraging to here record the fact that the Kiveton Park Rural District Council, to whom the above admirable advice was addressed, have now (Oct., 1897) willingly become partners in the Handsworth, Kiveton Park, and Rotherham Joint Hospital District, formed under order of the West Riding County Council.

Disinfection means the destruction of the organisms of disease and the prevention of their spreading from sick persons or from any article of clothing which may have become infected. When this is done effectually the spread of the disease is arrested. From information obtained and from what one hears, the disinfection of infected houses is frequently only perfunctorily performed. Ventilation by the admission of fresh air and sunlight, and the exposure of those articles which cannot be boiled to the fumes of burning sulphur are the ordinary means employed. But no disinfection should supersede the best prevention of all, namely, cleanliness. In the Wortley Report (No. 2 Div.) Mr. Spowart gives good advice. He observes:—“It is of the greatest importance that thorough disinfection of houses should be made in every case where any infectious disease has existed, whether the case has been removed to the hospital or not. This should not be done hurriedly, and consequently cannot be accomplished efficiently when removal is taking place and the ambulance at the door.” Mr. Greenwood, of Ossett, recognises the value of efficient disinfection, and writes:—“In dealing with infectious diseases, we are placed at a serious disadvantage in not having a disinfector. I have referred in previous reports to the very imperfect and unsatisfactory mode of disinfection as at present carried out.”

Mr. Lownds, commenting upon an outbreak of scarlet fever in the Great Ouseburn Rural District (S.), observes that though “the source of the new infection was not demonstrable, imperfect disinfection of clothing was a likely source.”

Water Supplies.—Pure water is one of the first essentials of healthy living, and few subjects deserve more attention. The supply should not only be pure, but constant and abundant, to fulfil the numberless purposes for which it is wanted. The introduction of an abundant supply of water is so intimately associated with the public health and public welfare that the execution and management of such works should be absolutely confined to local authorities, who should have greater facilities for purchasing existing companies' undertakings, and, where already acquired, the power of buying, at a reasonable cost, the ground within the catchment area, so that it may be protected from all possible sources of contamination. Private water companies, high-minded though they may be, look to such undertakings as sources of revenue, and not solely as objects for the public good; hence, the direct consequences following the consumption of polluted water are not appreciated by such companies until too late. We have seen this in the West Riding, and we hear of it now at Maidstone and Lynn. Experience has demonstrated that much of the disease incident to poverty may be relieved by a copious supply of wholesome water. It has often been shown that if people are forced to fetch their water some distance they cannot have the same encouragement for practices of cleanliness and decency as they would have if the water were handy.

This important subject has undoubtedly been receiving increased attention throughout the West Riding during 1896. Dr. Meredith Young, in his Report upon the Halifax Rural District, makes the following allegation:—“The water supply of a large portion of this district is, in its present state, utterly insufficient in quantity, and is liable to constant pollution. This matter has

“been reported upon by your Medical Officers of Health for the last nine years, and is yet in absolutely the same state as when first mentioned. This, however, is only the fault of your Council, in so far as you have not held the Parochial Committee to its duty.” He continues :—“In the Annual Report of the Medical Officer of Health for 1888, practically the same statement has been made, and it has been repeated, I think, every year since that date. I have myself made the same complaint to your Council on at least two previous occasions. I have also received complaints, verbal and written, from residents of that district, and in response to an urgent complaint in 1895, I visited the place, reported the matter in detail to your Council, and succeeded in getting a deputation appointed to inspect the water supply. This they did, accompanied by several members of the Parochial Committee. The water supply was, I believe, unanimously condemned, and the Surveyor was instructed to prepare a scheme on sanitary lines.”

Mr. Peck, in discussing the Queensbury water supply, says :—“It is of fairly good quality, but I have had numerous complaints, especially during August, September and October, as to its dirty colour. This is doubtless due to the quantity of peat it contains. Many houses, especially in Beggar-ington and Mountain, get their supply from surface wells. I desire again to call the attention of the Council to the very inadequate supply of water to Mountain, and would urge the advisability of a conference with the Thornton Urban District Council, with the view to the preparation of a joint scheme for an efficient supply of water to the whole of Mountain.”

Dr. Castle indicates that there are unsatisfactory supplies in the Darfield District, and recommends “that the question of the water supply be gone into, and where it is found that there is a manifestly dangerous or inadequate supply, that some arrangements be made for providing a better one.” In the Selby Rural District, water is often directly associated with sickness, for it appears from the report that “every year’s history repeats in some districts, the story of a well subject to being fouled from its surroundings, becoming the cause of an outbreak of fever after infected matter had reached the water by the same channels as conveyed to it before the non-infected matter from the drain or ashpit. I have already repeated a warning against the use for drinking of the water from the rivers.” Dr. Wilson, in the same report, goes on to say :—“If greater attention was paid to the condition of the pumps and also of the well covers, some of the causes of the water being polluted would be prevented.” He also adds : “In Newland Parish, on the river bank, there is no well water available, and two or three wells are urgently required. At Church End, Cawood, also the inhabitants have only the river as their supply.”

Mr. Atkinson is doing good work in the Oakworth District. He writes :—“At Laycock the inhabitants have suffered this year from deficient supply, which is also rendered liable to pollution by cattle. A meeting of property owners was called, and they are considering means for obtaining a better supply. In October last I reported that the water supplies to Chip Hill and Bogthorn had been defective in quality and were liable to pollution, and the owners of property have since been noticed to provide a more suitable supply, failing which the Council will extend their main from Sykes Head. No extension of public mains has been laid this year.”

Dr. Hoyle, in the Soyland Report, urges the needs of Ripponden in the matter of water supply :—“ There is a great need for a fresh supply, as in a “ dry season like the last there is a scarcity ; a good many of the houses in “ the village of Ripponden itself were for many weeks without an adequate “ supply. The quality of the water also is not above suspicion, so one cannot “ come to any other conclusion than that the water supply is in an unsatis- “ factory state.”

Mr. Makeig Jones points out the inadequacy of the water supply to Swinton, and recommends an additional supply from Sheffield Corporation.

Many of the reports, however, contain gratifying notes of extension of water supplies to places hitherto in need. The following figures, taken from the reports, and dealing with new mains laid down during 1896, serve to show that the inhabitants of the Riding are gradually becoming better supplied with pure water under constant pressure :—

Sanitary District.	Extension of Water Mains, etc., during 1896.	Sanitary District.	Extension of Water Mains, etc., during 1896.
Ardsley	... 1000 yds.	Silsden	... 120 yds.
Balby-with-Hexthorpe	... 66 yds.	Skipton	... 255 yds.
Barnoldswick	... 1510 yds.	Swinton	... 152 yds.
Bingley Outer	... 14 houses	Thornhill	... 1591 yds.
Birstal	... 594 yds.	Thornton	... 350 yds.
Clayton	... 33 houses	Wombwell	... 4 houses
Denby and Cumberworth..	750 yds.	Doncaster R.	... 21 new wells sunk.
Gomersal	... 20 houses	Kiveton Park R...	New well at Wales.
Haworth	... 1005 yds.	Penistone R.	... 550 yards.
Lepton	... To 1 farm	Ripon R.	... To Grewelthorpe & Kirkby Malzeard.
Monk Bretton	... 340 yds.	Tadcaster R.	... 1590 yards. Also 10 new wells.
Mytholmroyd	... 1137 yds., and 69 houses	Wakefield R.	... 3 miles.
Rothwell	... 1080 yds.		
Shepley	... To Knowle		

Unfortunately there are still a large number of places more or less populous where water supply is sorely needed. Some of these are included in the following list of places mentioned in the 1896 Reports as being inefficiently supplied with water and requiring the attention of the Sanitary Authorities :—

Barkisland	... Inadequate.
Haworth ...	... Supply wanted at Coldshaw, and the Lees end of Hebden Road.
Holmfirth ...	... Many houses, situate close to water mains, still use water from polluted wells at some distance.
Rothwell ...	... Inadequate at Langley and Upper Lofthouse.
Shelley ...	... Inadequate.
Shepley ...	... Inadequate, except at lower levels

Soyland ...	... Inadequate.
Springhead	... Inadequate at Austerlands,
Goole R. ...	... Inadequate at Snaith, Hook, Reedness, Swinefleet, Whitgift, and Basefleet.
Great Ouseburn S.	... Generally unsatisfactory.
Halifax R.	... Inadequate at Upper Greetland, Clifton, and Norland.
Hunslet R.	... Inadequate at Thorp Stapleton, Newsham Green, and Middleton.
Kiveton Park R.	... Inadequate.
Penistone R.	... Inadequate at Thurgoland, Crane Moor, and Oxspring.
Pontefract R.	... Inadequate at New Frystone and Fairburn.
Settle R. ...	... Inadequate at Settle, Giggleswick, Ingleton, and Westhouse.
Tadcaster R.	... Inadequate at Micklefield.

Lead Poisoning.—This important subject has already received attention in the earlier part of this report (see page 7). It has been forced upon many sanitary authorities in the West Riding in connection with the public water supplies acting upon the leaden service pipes. The following extracts from the local reports for 1896 are interesting. Mr. Steele, of Morley, observes :—“ The water supply has caused much anxiety during the year. In the spring and summer the water . . . acted on “ lead—freely absorbing it, and causing many cases of lead poisoning.” Afterwards the Corporation took steps to apply chemical treatment to the water with the result that it “ no longer absorbs lead, and no fresh case of lead “ poisoning has occurred for many weeks. It only requires filtering beds to “ be erected to make the water as good as any in the country, and this should “ be done at once.” Dr. Scatterty explains that the portion of the Keighley supplies which is derived from the moors is filtered “ through Welsh coke “ sand, limestone and polarite.”

Mr. Brereton notes the action of the Morley water supplied to Gildersome. He says :—“ The lead-solvent action of the water, though “ variable (ranging from .35 to 0.18 grain of lead per gallon) is now nearly nil. “ A sample drawn during the early morning of 16th December from a lead pipe “ about 30 yards in length yielded only 0.08 grain of lead per gallon.”

Dr. Buncle complains strongly of the Wakefield water as supplied to Featherstone :—“ Complaints as to this are loud and numerous, and, I am “ bound to admit, well founded. We have taken precautions against lead “ poisoning (the district being entirely free); Wakefield should do the same, “ and not send out adulterated water, at no time good, and frequently unfit for “ any purpose.”

The following extract from Dr. Meredith Young's Report to the Halifax Rural District Council is somewhat lengthy, but still it is so interesting that

I think it advisable to quote the whole, as showing that absence of a public supply in lead service pipes does not always mean security from lead poisoning. Dr. Young says:—"The medical attendant at a case of pneumonia and lead poisoning combined wrote to me and asked me to investigate it for him. I immediately visited the place, and asked about the water supply. Finding that it was from an adjoining well, used by all the other members of the family and by another house in which no symptoms of lead poisoning were to be detected, I dismissed that as a probable cause for the time being, and questioned the man about his employment. He said he was a 'finisher' or folder of pieces at a certain dyeworks, and often had to complain of the dust generated in this work, which he said 'got on to his lungs.' I imagined that I had got a clue to the cause, and I took some of the patient's sputum for analysis. Before leaving the place, however, I examined the surroundings of the well, which is, I am informed, about 60 feet deep, and was provided with an ordinary pump. The depth of the well at once arrested my attention, for the following reason. The maximum height to which water can be lifted by a hand pump is 27 feet; therefore the suction tube of the pump could not be longer than this. Assuming that the water kept at about 6 or 8 feet deep in the well, and that the suction pipe dipped 2 feet into this, this would mean that the length of the barrel above the valve at its junction with the suction pipe would be about 27 feet. Of this 27 feet only about 20 inches in which the piston or bucket works is lined with copper; above this the barrel is usually lead. Take the total length of this lead barrel then at 25 feet. As the barrel is generally 4 inches in diameter the cubic contents of 25 feet of it would be 3,600 inches, or, roughly, 2 cubic feet, and as a cubic foot of water is equivalent to 6 $\frac{1}{4}$ gallons there would be about 12 $\frac{1}{2}$ gallons of water in contact with this lead barrel often for a long time—always, of course, overnight. Add to this about 1 $\frac{1}{2}$ gallons which would be contained in the suction pipe, and we should have about 14 gallons in contact with lead for some time. Probably the whole of this 14 gallons would not be removed in one day, but would remain for longer exposed to contamination. The well was surrounded by filth accumulations of all kinds; its gathering-ground was manured land; two heaps of manure and a liquid manure tank were within ten yards of it; a walled drain, which was leaking, passed within six yards of it, and a privy-midden was also placed about eight yards from it. I prophesied that the water would be bad, as impure water acts quickly, as a rule, on lead, but the residents strongly maintained that it was pure, and said that they had given hundreds of gallons to passing people in the summer season. Samples were taken and submitted for analysis. In the meantime I wrote to the dyeworks and asked if any lead salts were used there for dyeing processes. Whilst awaiting the reply I examined the sputum for any possible traces of lead and found no trace of it. . . . A few days after this the analyst's report came to hand, and showed the well water to be very badly polluted, and to contain four-fifths of a grain of lead per gallon. This then was the noted well water which Sunday excursionists had been so eager to secure—polluted by manure drainage percolation and poisoned with lead."

Besides the foregoing extracts the following brief notes are taken from the Annual Reports showing that the tendency of water to act upon lead is not confined to a few districts only :—

<i>Sanitary District,</i>	<i>Action of Water on Lead,</i>
Baildon	... Slight.
Barnsley Borough	... Practically none.
Batley Borough	... Much less than formerly.
Clayton West	... Solvent.
Gildersome	... Improved, but still solvent.
Gomersal	... Very slight.
Handsworth	... Slight.
Hebden Bridge	... Slight.
Marsden	... Solvent.
Meltham	... Scarcely any action.
Mirfield	... Solvent.
Morley	... No action for weeks.
Northowram	... Some.
Ossett Borough	... Marked solvent action, to the extent of from ·51 to ·98 grains per gallon.
Pudsey	... Very little.
Rawdon	... Extremely slight.
Rishworth	... Slight action.
Shelley	... Solvent.
Shepley	.. Solvent.
Shipley	... Slight.
Skelmanthorpe	... Solvent.
South Crosland	... Slight.
Southowram	... Two cases of plumbism presumably due to water.
Todmorden Borough	... Some of the water acts.
Worsborough	... Practically none.
Halifax Rural	... Solvency varies.
Wortley Rural	... None since treatment.

Sewerage, Drainage, &c.—One of the most important duties devolving upon sanitary authorities. is to take steps for effectually getting rid of the sewage and liquid filth which necessarily accumulates in and around dwellings, and for this purpose sewers properly constructed unquestionably present the most efficient means at their disposal.

The Idle Report refers to the whole of Thackley as still without a proper system of sewerage:—" Although borrowing powers have been obtained, nothing further has been done towards carrying out the actual work. I may point out that this delay is grossly unfair to the inhabitants of that portion of your district, who have to contribute their share towards the improvements of Idle, and are denied any similar sanitary advantages for themselves." In the Report for Doncaster Borough it is stated that defective iron traps are often met with in house drains there.—" These are nearly always placed over a small cesspool in which a considerable amount of sediment accumulates,

“ These iron and very imperfect traps were found at 22 houses where cases of diphtheria or typhoid fever were reported. The ventilating pipes provided for private drains are repeatedly found to be too short, and opening out near to some window of the house. The risks of a down draught carrying the air from the ventilating pipe into the house ought to be guarded against, and the recommendation has been to carry such pipes to a greater height.”

In commenting on gully traps, Dr. Johnstone, in the Ilkley Report, writes :—“ The wisdom of the Council in appointing a special workman to attend to and empty the various gully traps in the vicinity of private houses is also becoming more and more apparent. These traps being the receptacles of all kinds of refuse from culinary or lavatory sinks contain abundant material which in time will decompose and generate noxious gases, which, despite disconnection, might enter the house ; so that all attempts to keep them clean must be advantageous to the household. The appointment of a workman for this special duty, though not confined to Ilkley, is far from prevalent, but certainly is one worthy of imitation.” Dr. Ross considers that at Penistone “ the general sanitary condition of the town is as good as can be expected in the absence of an urgently-needed sewerage system. The want of this is especially felt in the district of the Green. In dry weather, the condition of the Green Dyke, receiving as it does the sewage of a large proportion of the houses on the Green, is very offensive.”

Mr. Hebblethwaite, of Burley, repeats the experience of most sanitarians, as follows :—“ In July I reported a serious nuisance at the Red Lion Inn, and caused the drains to be exposed. It was found that the drains had been laid down without any connection with a sewer or main drain, and that the terminal pipes were filled up with solid deposit, and every joint faulty—as complete a piece of slip-shod work as was ever witnessed. The whole of the drain was re-laid with fresh pipes, with cemented joints, connected with the main sewer, and the nuisance disappeared.” Mr. Knowles, of Dodworth, considers that “ the expenditure of some thousands in new sewage works demands logically that some use shall be made of the said works in the form of water-carriage for the removal of excreta.”

The Keighley Report also advocates a similar policy :—“ Nothing short of the substitution of water-carriage for the privy midden will meet the exigencies of this neighbourhood, and, the sooner the sewer is completed as far as Ingrow, the better for the health and the comfort of the people there. At the risk of being considered importunate, I must repeat what I said last year, to the effect that there are 5,000 excreta tubs in use in the Borough for the collection of night-soil, which, from a health point, could be far better removed by water-carriage. If the £700 which is annually expended in the weekly collection and removal of excreta from tubs and mill tanks was expended in the conversion of the pail system into waste water closets, not only would the sanitary condition of the Borough be improved, but in a few years there would be a distinct pecuniary saving to the town.”

Dr. Picken urges immediate attention to the Rawmarsh sewers as follows :—“ The statement of the Sanitary Inspector that ‘ wherever sewers are

“ ‘ opened for repairs or inspection the sewer gas is overpowering, and I have
 “ ‘ complaints frequently of the same in houses,’ is a grave one, and requires
 “ prompt attention. Periodical flushing of the sewers by washing away
 “ deposits would greatly diminish the generation and accumulation of gas.
 “ The condition of the Parkgate sewer in Rotherham Road ought to be
 “ exactly ascertained.” After congratulating the Authority on the completion
 of the sewage out-fall works, he goes on to remind them that “some attention
 “ is also required at the proximal and perhaps more important end of our sewer
 “ system—the drains, yards, and the houses in which the people live.”

The Tadcaster Rural District Council, it appears from the Report, “has
 “ arranged with some person in the largest parishes who is paid for flushing
 “ out the sewers at stated times and whenever it is considered necessary;
 “ additional ventilators are also provided and more manholes are built. All
 “ this work is done to provide better means of carrying away the liquid sewage
 “ from houses, and private owners are in turn called upon to provide the
 “ necessary drains to connect with these sewers, with the needed protection of
 “ careful disconnection of the house drains and efficient gully traps.”

Disconnection of sink pipes is urged in the Thurlstone Report by Mr.
 Wilson, who writes:—“ This is still in a backward state. No sink-pipes have
 “ been disconnected during the year, though there are many at different parts
 “ of the township that run straight into the drain untrapped. Often when
 “ they are disconnected there is only an old stone drain to take the sink water
 “ away, and many have badly-constructed traps, so that the sink water stands
 “ against the side of the houses.”

Mr. Brereton, of Gildersome, observes :—“ On my recommendation, early
 “ in 1895, you issued an order that all house waste-pipes should be trapped
 “ underneath the sink, and disconnected from the drain. Many of the
 “ property owners have complied with this order, but I regret to say that some
 “ are defaulters in this matter.”

General complaint is made in the Halifax Rural Report as follows :—“ To
 “ put it shortly, the sewerage and refuse disposal systems in none of your
 “ districts are satisfactory. In Norland and Hartshead more particularly
 “ they are most unsatisfactory.”

Mr. Stevenson, of Rothwell, in discussing the new sewerage, records much
 good work :—“ The improvements,” he writes, “ necessitated extensive altera-
 “ tions in the sanitary arrangements which were far from satisfactory. The
 “ old deep privy middens have been done away with, and the privies have
 “ been converted into water closets or trough closets, and the middens have
 “ been made into dry ashpits conforming to your bye-laws. The sink pipes,
 “ which in the majority of the houses either entered the sewer direct or were
 “ connected with gullies situated in the cellars, have all been made to discharge
 “ over properly trapped gullies in the open air. The above alterations and
 “ improvements must, from a sanitary point of view, tend very materially
 “ towards the comfort and welfare of the inhabitants.”

Throughout the Riding there is a great deal of work being done in the way of replacing old leaky and dangerous sewers with properly laid pipes. Of late years many miles of new sewers have been laid, and the following list, compiled from the reports, gives some of the sewer extensions of 1896 :—

Sanitary District.	New Sewers laid,	Sanitary District.	New Sewers laid.
Ardsley East and West...	124 yds.	Rawmarsh	... 344 yds.
Balby-with-Hexthorpe ...	281 „	Ripon City	... Many „
Barnoldswick	... 1107 „	Rothwell	... 290 „
Barnsley Borough	... 200 „	Shelley	... 400 „
Birkinshaw	... 155 „	Shepley	... 300 „
Denby and Cumberworth	508 „	Silsden	... 1148 „
Greetland	... 45 „	Skipton	... 395 „
Guisseley	... 240 „	Slaithwaite	... 3200 „
Hebden Bridge	... 1700 „	Soothill Upper	... 150 „
Holme	... 165 „	Thornhill	... 1553 „
Holmfirth	... 362 „	Thornton	... 500 „
Honley	... 76 „	Tickhill	... 1100 „
Kirkheaton	... 1160 „	Wombwell	... 730 „
Lepton	... 150 „	Doncaster R. 390 yds. at Armthorpe.	
Netherthong	... 191 „	Goole R. ... Rawcliffe completed.	
North Bierley	... 100 „	Hunslet R., 77 yds. at Woodlesford.	
Ossett	... 306 „	Keighley R.	... 291 yds.
Oxenhope	... 4289 „	Selby R.	... 1402 „
Pudsey	... 3000 „	Todmorden R.	... 222 „
Queensbury	... 2438 „	Wharfedale R. (S)	... 786 „

The dual system of sewerage (making separate provision for surface water, &c., and for sewage proper), has been wholly or partly adopted at Baildon, Castleford, Hebden Bridge, Ilkley, Knaresborough, Liversedge, Pudsey, Rawdon, Ripon, Roystone, Slaithwaite, Thornhill, Wilsden, Wombwell, and Yeadon, and also in portions of the Kiveton Park and Rotherham Rural Districts.

With regard to ventilation of sewers the returns show that in addition to manholes and lampholes, special shafts have been added at Horbury, Knaresborough, Monk Bretton, Morley Borough, Pudsey, Ripon, Soothill Nether, South Crosland, Wilsden, Worsborough, Yeadon, and also in Bishopthorpe R., Halifax R., Kiveton Park R. and Wakefield R.

It would appear that only in 25 districts in the Riding have special preparations been made for the flushing of sewers, a most desirable provision in the prevention of foul gases which are recorded in so many reports as escaping from the manholes in the roadways.

Sewage disposal at outfall works is in such a transitory condition at present that I have thought it better to delay any remarks upon this subject until the next report.

Scavenging and Refuse Removal.—It has been tritely said :—“ There is no disinfectant for filth, except its removal.” This important operation should be in the hands of the Sanitary Authority (as it is in 126 districts in the Riding), because many of the nuisances in this connection can only be dealt with by the Authority. Of these districts it is recorded that where the work is done by the local authority’s own staff it is generally satisfactorily performed, but, where contracted for the results are not so good, and form the subject of frequent deprecatory remarks in the local reports.

In no less than 41 districts the scavenging is left to the tenants and owners, who, in turn, often have to wait the pleasure and convenience of the farmers to remove the contents of the middens, etc. The result is, that just when scavenging is most required, the farmer is otherwise engaged on his land, and so large accumulations ensue. This lack of scavenging—really the genesis of nuisances—is a great blot upon the sanitation of villages, and frequently a menace to public health.

The ordinary system of open privies and ashpits again forms the subject of frequent condemnatory remarks throughout the reports for 1896, as being in direct opposition to all that is involved in modern hygiene, or even in the Mosaic Law. They are well adapted for the vitiation of the air, the contamination of the soil, and the pollution of neighbouring wells. Instead of being of small capacity, raised above the ground-level with cemented or flagged sides and bottom, and covered over to exclude rain and sunshine (which hasten putrefaction of the contents), many are wanting in these particulars. We are daily noticing accumulations of putrescing matter—liquid and solid—emitting a stench at all times, but in time of emptying so horrible as to sicken the dwellers around. How revolting, too, must be the emptying, when a man has to enter and work in such an offensive mass ! The result often is that the privy is only half emptied.

Much of this denunciation would be removed by the Authority undertaking the scavenging, as they alone can properly organize this work and insist upon the reconstruction of ashpits and privies according to the model bye-laws.

The value of public scavenging is expressed in the following reports :—

DENHOLME.—“ In consequence of the scavenging being carried on by the Council’s sanitary staff the number of privies and ashpits cleansed have risen from 96 in the previous year to 332, and, so far as at present can be seen, with the most satisfactory results.”

GUNTHWAITE.—“ The condition of the privies and ashpits has improved as far as their proper emptying is concerned. This is due to the fact that the Council has adopted public scavenging. Many of the privies are, however, old, and some semi-ruinous.”

OTLEY.—“ The scavenging is still done by the Board’s staff. The work is done efficiently and at a great saving to the town, There are now very few complaints, and we are enabled to find out nuisances.”

ROTHWELL.—“The emptying and disinfecting the ashpits and privies continues to be done by your own sanitary staff. In Stourton the ashpit contents are removed at so much per day for man and horse ; in all the other parts of your district the contractors are paid so much per load. The plan at Stourton is more expensive, but it is certainly much more satisfactory, as there the ashpit refuse is carted away as it is thrown out, and the work is completed by six a.m., whereas in other parts of the district the ashpit contents remain undisturbed frequently for hours after they are thrown out on to the street, and the carting away continues till nine and ten in the morning, and sometimes much later. In this respect there is need for improvement and there should likewise be more frequent and more systematic emptying of ashpits and privies.”

THORNTON.—“About a year ago your Council undertook the duty of emptying ashpits and privies, and let the work to contractors. I am pleased to say that as far as I have been able to see, it has been a complete success.”

WORSBOROUGH.—“The scavenging of the district is now done by men under your direct employment instead of by contractors, and there has been a decided improvement in the regularity and thoroughness with which the work is done.”

The subjoined reports, amongst others, urge the adoption of public scavenging :—QUEENSBURY :—“I regret that the condition of some of the ashpits is still insanitary. Many of them are not emptied often enough, and so animal and vegetable refuse is allowed to remain and decompose, causing most offensive exhalations, which are very deleterious to health. It would, I consider, be much more satisfactory if the Council were to undertake the cleansing of these ashpits, employing their own staff for the purpose, who should empty them during the night.”

SHELLEY.—“The privies and ashpits are still emptied by the landlords and tenants. They have been attended to fairly well, but, as so often pointed out, matters must be more or less unsatisfactory until public scavenging is adopted.”

HOYLANDSWAINE.—“With a view of preventing the throwing of broken pots, tins, and other rubbish into ashpits or water streams, or upon the highway, arrangements have been made for the collection thereof by a cart passing through the township on the last Friday in each month. And I very much hope that householders will assist the Council in their endeavours in this direction. I hope you will soon be able to make arrangements for a system of periodical emptying and removal of ashpit contents by your authority. The irregularity, and slovenly way in which this is done by tenants and farmers up to the present time can only be remedied by your taking in hand this work yourselves.”

SOUTHOWRAM.—“The two problems which now appear to me to press for solution are the establishment of a system by which the refuse from privies and middens shall be regularly and frequently removed ; and the issue of bye-laws which shall define exactly the structure, materials, and conditions of erection of such conveniences.”

LUDDENDENFOOT.—“There are too many large uncovered privy middens and ashpits yet in your district, and unless these be covered in and efficiently scavenged by your authority, and not left to tenants or property owners, they may be fruitful sources of disease, especially when the hot weather comes again.”

It is to be hoped that with the large increase of modern sewerage, the present condition of things will be altered by the adoption of the water-carriage system in the populous parts. In the following reports for 1896 the adoption of water-carriage is advocated.

CLECKHEATON.—“With the prospective completion of the new sewers I desire to record my opinion in favour of the water-carriage system, and the hope that this may grow in popularity and be encouraged in preference to the old objectionable privy midden system. The advantages to the inhabitants of houses in times of sickness and in a matter of daily comfort cannot be too strongly emphasised.”

CLAYTON.—“The present filthy manner of emptying closets is alike an offence against civilisation and the sound principles of hygiene. The great fallacy of the system, is that the closets are not emptied until the ashpits are full. In many cases it takes some months to fill the ashpits, during which time the closets should have been emptied many times. If the pail system were adopted it would be possible to change them throughout the village in a very short time, and the sale of the excreta for manurial purposes would go some way towards defraying the extra expense incurred.”

OSSETT.—“One of the reasons why the Sanitary Authority has held to the privy system has been the assumption that the difficulty of treatment of the sewage would thereby be greatly increased. There is, however, no sufficient ground for this belief. It has been found that the admission to, or rejection from, sewers of the solid excreta makes no appreciable difference to the composition of sewage water. In any case, sewage must always contain suspended and dissolved animal and vegetable matters derived from the refuse of houses, together with the drainage from middens, urinals, manure heaps, etc. If water closets were generally adopted, and smaller receptacles for ashes and dry refuse substituted for the present middens, the removal of refuse would be a much simpler and probably also less costly process. As things are now a large number of middens (153) have to be emptied by wheeling the refuse out in barrows, whereas, if movable tubs were employed, the labour and cost would be very materially less.”

PUDSEY.—“By the water-closet system the sewage is at once removed and cleared completely away. It is gratifying to record that the old-fashioned, disgusting, insanitary privy-middens are being gradually replaced in increasing numbers every year by some type of water-closets, and that nearly all the new houses built in 1896 were provided with them. The charge of 8s. per year, which interfered considerably with the adoption of waste-water closets, was abolished during the year.”

HECKMONDWIKE.—“Slop water-closets in many cases have been substituted for privies, and it is a step in the right direction if they work properly.”

In some Reports increased privy and ashpit accommodation is desired, notably the following :—

GILDERSOME.—“ The aggregation of more than two privies to one midden is a great blot on the sanitary condition of the district. There are some middens which have attached to them, four, six, and even in one instance I think eight privies, this necessitates a very large accumulation of filth with all its attendant evil consequences.”

GOLCAR.—“ Some nine or ten new closets have been built, or are now in course of erection, in furtherance of the rule that each house shall have a separate closet.”

THURLSTONE.—“ No new privies have been built during the year, nor have any of the old insanitary ones been altered. There are many badly constructed privies all over the township, and in many cases the number is deficient, so that as many as four houses have to join at one, which in some cases is in a dilapidated condition. The emptying of ashpits is also sadly neglected.”

SWINTON.—“ I must again call the Council’s attention to the deficiency of privy accommodation in various parts of the district. Until the Council makes a bye-law, stipulating that there must be one privy for each house, and fixes upon a standard pattern, the surveyor and myself can do very little in the matter.”

KNARESBOROUGH.—“ The Inspector of Nuisances has during the year, at each meeting of the Council, presented a list of insufficient closet, privy, or ashpit accommodation—dividing the town for that purpose into districts, and taking them each in turn. The result has been a great improvement, and in many cases an abatement of most serious nuisances.”

RAVENSTHORPE.—“ There is also an improvement in the care and construction of the ashpits, etc., but I must urge the necessity, both from a moral and sanitary view, of having each house provided with a separate privy.”

Mr. Wills, writing in the Kiveton Park Rural Report, inclines to the use of pails :—“ If a movable receptacle such as a galvanised iron pan be used, it makes the emptying more easy and less offensive in cases where a small family has a closet to itself, and where the garden is at a distance. This system has been carried out for many years at Kiveton Park, and the improvement in the condition of that locality from this simple practice has been most remarkable, yet in the first instance I was told it was impossible to carry out, and I was opposed violently.”

Mr. Atkinson reports that at Skipton “ great improvement has been made in the alteration and reconstruction of existing ashpits, and all new ashpits are constructed on an approved form. A number of movable ash bins have been provided where the ashpits were not easy of access. The Council has insisted upon the alteration or reconstruction of all ashpits which are not in accordance with the bye-laws in force, and have undertaken the emptying of these only. This applies at present to about one-half of the ashpits in the town.”

At Methley Mr. Taylor had unfortunately to report as follows :—“The scavenging is in the same position as last year, difficulty being experienced in getting the middens cleaned out regularly. No steps have been taken with regard to the houses situated in Watergate, which I reported last April.”

Prompt action should be taken at Thornton, for Mr. Tunstall reports :—“A very large number of the privy middens in the district are still in an insanitary condition, and require to be dealt with promptly. Many of them from being uncovered, sunk into the ground, being too large, without doors and with dilapidated walls, are not only a great danger to health, but are also very unsightly and deteriorating to the district.”

Dr. Scott, of Handsworth, would like to see the co-operation of the tenants in work which is for their own good :—“Privy middens are often fouled by the throwing of slops into them, a large number being, in addition, uncovered ; the contents thus become putrescent and dangerous to those who go near them. With the object of preventing this state of things, your Council has had posted on the door of each privy a notice threatening with prosecution any person found throwing slops into middens. You have also caused a correct return of the number of uncovered privy middens to be made with, I hope, the ultimate intention of causing all to be covered, and thus put into a more sanitary condition.”

Mr. Peck, of Northowram, gives a similar report :—“The condition of the ashpits is still very insanitary, many of the inhabitants still put their animal and vegetable refuse into the ashpits instead of burning them, thus causing decomposition and consequent exhalations, and the ashpits are not emptied often enough.”

Sanitary Work.—Though much work is still ahead and is yet untouched in many districts, one cannot help but note in analysing the reports that much solid progress has been accomplished in connection with drainage, sewerage, and water supply, while there are a great many schemes at present under consideration. There is no doubt that a large amount of sanitary reform is being effected in a quiet manner throughout the Riding which does not figure conspicuously in the reports, for example, Dr. Dyer observes that at Cleckheaton “satisfactory results in the removal of sanitary defects and the abatement of nuisances have in some cases been achieved without the formality of a report to you, though in some cases delay has occurred in consequence of this method of procedure, and a report has been necessary at length. It appears advisable to me, however, where practicable, to ensure to property owners an opportunity of sanitary reform without a resort to the formal serving of a notice.”

Sanitary work at Hebden Bridge is shown by Dr. Lawson to have been very profitable. He writes :—“Twenty years since, when our population was one-half of what it is at present, we had about an equal number of deaths yearly. This in itself will show the great advantage Hebden Bridge has derived from the various sanitary reforms which have taken place during that period.”

It is certainly economy on the true principle to prevent sickness and outbreaks of infectious disease by discovering and at once removing insanitary conditions, instead of waiting until the notification of prevalent disease reveals such conditions, and then proceeding to have them remedied after they have been the cause of mischief. Hence, the value of systematic house-to-house inspection, with duly recorded notes of all inspections, which are invaluable, not only in lessening the work of the health officer afterwards, but also in promoting the true work of prevention.

Mr. Thorp, of Todmorden, records good work in this direction. He says :—“ Perhaps the most noteworthy item to record in reference to the year’s work is the completion of the house-to-house inspection of the district, commenced in September, 1894 ; so that we now possess for the first time a record of the general sanitary condition of the whole district.” Similarly, at Burnley, “ a very complete inspection of almost every house in the village has been made, and a register compiled with the sanitary arrangements of every house carefully noted. All owners of property whose premises did not conform strictly to the bye-laws, had notice served upon them, and many improvements have been effected.”

Mr. Twigg gives his experience at Mexborough thus :—“ On making a house-to-house inspection of the district one cannot but be struck with one thing, and especially in the west end or new part of the town, and that is the number of gullies or sink waste pipes that are out of order and not fulfilling the purpose for which they are intended.”

Dr. Macvie, of Baildon, also expresses the value he has found in house-to-house inspection. Some health officers boldly relate some futile attempts to effect improvement. For example, Dr. Honeyburne, of Idle, writes :—“ In many instances, after the serving of a legal notice to abate a nuisance, the matter has been allowed to drop, and the nuisance to continue, as though no action had been taken by you. Such a policy seems to me to be most injurious to the satisfactory carrying out of the sanitary law. It is better to do nothing at all than, after having condemned a state of things as a nuisance, to condone the offence by subsequent inaction.”

Mr. Swallow, in the Report to the Penistone Rural District Council, urges that “ in many cases where no notice is taken proceedings ought to be instituted without delay.”

Mr. Steele, in his examination of the Gomersal District, came across various long-standing nuisances, some of which, he adds, “ I have complained of every year for ten years or more.”

At Eccleshill, Mr. Pitney Aston records similar inaction as follows :—“ The dilapidated midden ashpit in Haigh Fold, Moorside, is just as it has been for years, and the insanitary area, including Chapel Street, Chapel Walk, and Harrison’s Buildings, condemned by me in 1894, under the Houses of the Working Classes Acts, remains, too, much as it was, although serious defects were described in detail, affecting practically every dwelling in this district, while as many as 32 persons, from five families, have to use one privy, and in some cases there is no privy accommodation

“at all, while whole rows of houses are without spouting, the cellars are damp, the waste-pipes are untrapped, the drains defective, and the privies and urinals at the Assembly Rooms are disgusting.”

Dr. Meredith Young, in his Report on Brighouse for 1896, points out the lack of co-operation by the inhabitants with sanitary measures by the Authorities:—“A house may be supplied with every sanitary requirement, but owing to ignorance, carelessness, or laziness on the part of the inhabitants these are allowed to get into bad order—gully traps get choked, sink waste water is thrown into dry ashpits, or over the surface of the yard in front of the houses, tea leaves are thrown out into a yard from the doorstep, cabbage leaves, potato parings, and every variety of organic matter liable to putrefaction is thrown into an ashpit, and in a host of other ways the people live like animals, surrounded by filth and dirt of their own making.”

In the Greasborough Report, Mr. Cheesewright draws attention to the dangers of improper keeping of animals.—“Unless the whole subsoil is to become saturated with liquid manure, the efforts of the sanitary officials, with the help of the Council, will have to be directed to the indiscriminate keeping of animals and swine under conditions which are prejudicial to the Public Health.”

With regard to prosecutions, few of the reports mention any enforcement of the law, but at Skipton “legal proceedings were taken in two instances—one for keeping a common lodging house without being ‘registered,’ in which case a fine of £1 and costs was inflicted; and the other, under Sec. 126, Public Health Act, 1875, for exposure of infected person, the penalty awarded being 10s. and costs.”

It will thus be seen that those nuisances which owe their origin to defective drainage, etc., are unquestionably the most troublesome.

Paving of Streets and Yards.—In the Goole Rural Report reference is made to the wet and dirty condition of back yards, etc., as follows:—“There is often none, or very indifferent paving, and the surface becomes littered with all manner of refuse in an attempt to soak up the wet; both conditions are injurious to the health of the inmates, and some plain evidence of this may be found in the excessive death rate from diseases of the lungs last year among children.”

At Doncaster, a similar state of things is, happily, receiving attention. “There is one branch of the sanitary work which is rapidly being carried out in many parts of the town, viz., the repaving of back passages, and also of many of the common yards. . . . The work means a change from wet and dirty yards to a clean, dry surface, and a more wholesome condition in and close to the houses.”

Dr. Hunter, of Pudsey, considers that “the proper construction and care of the streets has a distinct bearing on the health of the people. Hard, smooth, impervious surfaces facilitate the flowing off of water, and prevent its soaking into the house foundations. They are also easier to clean. A thick covering of mud in wet weather, in addition to causing wet feet, makes

“the air wet and cold. It also provides the ‘raw material’ for the production of dust in dry weather; and dust, in addition to the discomfort and injury to property it causes, is a vehicle for the carrying about of all kinds of disease germs.”

Mr. Makeig Jones, in the Swinton Report, again mentions that “improvements of private streets are greatly needed. The course adopted by the Council allows owners to build first, and make up the streets at their pleasure, as he or they choose, which is generally as follows: To form carriage-way, strip off the soil, and cover with ashes, a few inches thick, any size. Kerb is used from eight inches downward. Footpaths, some of which have only a sprinkling of ashes over the soil, and where there are several owners to one street, may be seen short lengths of loose brick, paving, flagging (common), asphaltting (about $1\frac{1}{2}$ inch thick), concrete and patches ashed here and there; and not one sewer, to my knowledge, in a private street throughout the whole district is ventilated; and very few provided with means for flushing and inspecting; these streets are nothing but a quagmire after the least shower of rain. A few of the owners, however, attempt to make up the streets in a more substantial manner, but these are far from satisfactory. And if the Council continue to allow people to build before making up the streets, then immediately on completion of building, notice should be given to form and make good, although, in my opinion, by far the better plan is to have streets properly sewered, formed, and made good before building commences. But in order to compel the owners to execute this very desirable work it would be necessary to either adopt the Private Street Works Act, or to put the complicated machinery of Section 150 of the Public Health Act, 1875, in force, and under the latter the expense to the landlords would be, in many cases, very disproportionate to the value of their property.”

Bye-Laws.—Before these become operative in a district the proposed bye-laws must be submitted for the approval of the Local Government Board, and in framing bye-laws it should be borne in mind that they are only intended to supplement and not to supplant general legislation. Some districts in the West Riding do not possess bye-laws, while in others the bye-laws in force are obsolete and inoperative.

While there is undoubtedly much improvement in the erection of new buildings, there is still great need, especially in rural districts, for the adoption and enforcement of building regulations, so that those who would either wilfully or ignorantly erect dwellings contrary to the simplest axioms of house construction may find it necessary to provide proper habitations.

Too frequently the Sanitary Authority postpones the framing of bye-laws until some flagrant case demands attention, when it is found, no matter how badly the buildings and its necessities are designed, the Authority is powerless until the place is erected and occupied and a nuisance created.

A “Model” code of Bye-laws has been framed by the Local Government Board on well-established principles, and these have been supplemented by others under Sec. 23 and 26 of the Public Health Acts Amendment Act,

1890, but not yet issued by the Local Government Board. Although local wants may differ, there is a line to which conformity should exist in all districts, and so far, the bye-laws should be compulsorily applicable. The chaotic confusion arising from dissimilarity in this respect leads to a condition of diffident unwillingness amongst Authorities in the adoption and enforcement of bye-laws: while the inexperienced houseowner realises too late that erections which defy the principles of sanitation are never-ending sources of mischief and expense.

SUBJECTS OF BYE-LAWS.

The following Table is an attempt to show, in concise form, the matters which may be regulated by bye-laws properly framed and adopted. For particulars as to conferring urban powers upon rural authorities, see Public Health Act, 1875, Section 276, by which the Local Government Board may invest, on the application of a Rural District Council, such authority with all or any of the powers not specified in column 4 of the following tabular statement.

Subjects of Bye-laws.	Authorising Act.	Authority by whom Bye-laws may be adopted.		Remarks.
		Urban.	Rural.	
1	2	3	4	5
NEW STREETS AND BUILDINGS. As to level, width, construction, and sewerage of new streets	Public Health Act, 1875, Sec. 157	Yes	—	Extended by Public Health Acts Amendment Act, 1870, Sec. 23
Structure of walls, foundations, roofs, and chimneys of new buildings	„	Yes	Yes, with respect to walls and foundations	Applicable to rural districts by Amending Act of 1890
Air space about, and ventilation of buildings	„	Yes	Yes	„
Drainage of buildings, water closets, earth closets, privies, ash-pits and cesspools	„	Yes	Yes	„

Subjects of Bye-Laws.	Authorising Act.	Authority by whom Bye-laws may be adopted.		Remarks.
		Urban.	Rural.	
1	2	3	4	5
Closing or prohibition of use of buildings unfit for habitation	Public Health Act, 1875, Sec. 157	Yes	Yes	Applicable to Rural districts by Amending Act of 1890
Notices, deposit of plans, and inspection by urban authority	„	Yes	—	See Public Health Act, Sec. 158
Removal of work done contrary to bye-laws	„	Yes	—	„
Keeping W.C.'s supplied with sufficient water for flushing	Public Health Act Amendment Act, 1890, Sec. 23	Yes	Yes	Extension of Sec. 157 of Public Health Act, 1875
Structure of floors, hearths, staircases, and height of rooms	„	Yes	Yes, for floor and height of rooms	
Paving of yards, and open spaces to dwelling houses	„	Yes	—	
Provision (in new streets) of secondary means of access for removal of house refuse	„	Yes	—	
EXISTING BUILDINGS.				
As to drainage of buildings, water closets, earth closets, privies, ashpits, and cesspools	„	Yes	Yes	Extension of Sec. 157 of Public Health Act, 1875
Keeping water closets supplied with sufficient water for flushing	„	Yes	Yes	„

Subject of Bye-Laws.	Authorising Act.	Authority by whom Bye-laws may be adopted.		Remarks.
		Urban.	Rural.	
1	2	3	4	5
ALTERATIONS OF BUILDINGS.				
For preventing buildings being altered so as to contravene bye-laws	Public Health Act Amendment Act, 1890, Sec. 23	Yes	Yes	
CLEANSING OF FOOTWAYS AND PAVEMENTS.	Public Health Act, 1875, Sec. 44	Yes	Yes	
NUISANCES.				
House refuse removal by occupier	,,	Yes	Yes	
Cleansing of earth closets, privies, ash-pits and cesspools	,,	Yes	Yes	
Removal of house refuse by local authority	Public Health Act Amendment Act, 1890, Sec. 26	Yes	Yes	
LODGING HOUSES.				
As to Common Lodging Houses	Public Health Act, 1875, Sec. 80	Yes	Yes	
Houses let in lodgings	Public Health Act, 1875, Sec. 90	Yes	Yes	
Lodging houses for the working classes	Housing of the Working Classes Act, 1890, Sec. 62	Yes	Yes	Except used as a separate dwelling
Seamen's Lodging Houses	Merchants' Shipping Act, 1883	Yes	Yes	

Subject of Bye-laws.	Authorising Act.	Authority by whom Bye-laws may be adopted.		Remarks.
		Urban.	Rural.	
1	2	3	4	5
TENTS, VANS, SHEDS, ETC. Promotion of cleanliness in, and the habitable condition of, for the prevention of infectious disease and nuisances	Housing of the Working Classes Act, 1885. Sec. 9	Yes	Yes	
MORTUARIES ...	Public Health Act, 1875, Sec. 141	Yes	Yes	
HOP PICKERS. Decent lodging and accommodation of	Public Health Act, 1875, Sec. 314	Yes	Yes	
FRUIT PICKERS. Decent lodging and accommodation of	Public Health (Fruit Pickers) Act, 1882, Sec. 2	Yes	Yes	
REMOVAL OF OFFENSIVE MATTER. As to time, carriage, and spilled matter	Public Health Act Amendment Act, 1890	Yes	—	
PREVENTION OF NUISANCES from snow, filth, dust, ashes, or rubbish	Public Health Act, 1875	Yes	—	
KEEPING OF ANIMALS on any premises so as to be injurious to health	Public Health Act, 1875	Yes	—	
OFFENSIVE TRADES ...	Public Health Act, 1875, Sec. 113	Yes	—	

Subject of Bye-laws.	Authorising Act.	Authority by whom Bye-laws may be adopted.		Remarks.
		Urban.	Rural.	
1	2	3	4	5
SLAUGHTER HOUSES. Management of ...	Public Health Act, 1875, Sec. 169	Yes	—	
Licensing, inspection, etc., of private slaughter houses	Towns Inspection Clauses Act, 1847, Sec. 128	Yes	—	
BURIAL GROUNDS ...	Local Government Act, 1858; Amending Act, 1861, Sec. 21	Yes	—	
BATHS, WASHHOUSES, and Swimming Baths	Baths and Washhouses Act, 1846, Sec. 34; Amending Act, 1878, Sec. 6	Yes	—	
MARKETS ...	Markets and Fairs Clauses Act, 1847	Yes	—	
CABMEN'S SHELTERS ...	Public Health Act Amendment Act, 1890, Sec. 40	Yes	—	

Parks, pleasure grounds, horses, boats, and vessels for hire, whirligigs, swings (driven by steam), shooting galleries, and Hackney carriages are also subject to Bye-laws. By the Local Government Act, 1888, Sec. 16, power is extended to County Councils to make Bye-laws (1) for the good rule and government, (2) for the prevention of nuisances not already punishable.

The following few extracts from the Annual Reports for 1896 will show the question of Bye-laws is demanding attention in the West Riding :—

Dr. Meredith Young, in his Report to the Halifax Rural District Council, writes :—“ About 47 new houses have been erected during the year, and in “ Skircoat and Clifton a fair amount of building is going on. It is high time, “ however, that some control was exercised over the sanitary and other “ arrangements of these new buildings.”

Mr. Pitney Aston illustrates one effect of want of bye-laws at Eccleshill. He remarks :—“ Repeated and urgent complaints have been made of the “ Bone Boiling Works. I protested at the time as to the sanctioning of the “ erection of these in their present position, but my advice was ignored, and “ as you don't seem at all inclined to adopt or formulate bye-laws as to “ offensive trades, I am afraid complaints will still be made. The owner has, “ however, improved matters to some extent.”

Dr. Buncle awaits bye-laws to prevent overcrowding at Featherstone :— “ The Council have formed themselves into a Committee for the revision of “ the Bye-laws, which is to include ‘Houses let in Lodgings.’ This, I “ trust, may materially assist us in the matter of overcrowding.”

Dr. Picken regrets the retrogressive action of the Rawmarsh Council, and observes :—“ Instead of having to congratulate the Council in showing a “ spirit of progress in the adoption of new bye-laws, &c., I have again seen “ evidence of a tendency to revert to ancient, unsightly, and insanitary “ methods in the erection of dwelling-houses. Three dwelling houses were “ built during the year, with your approval, which are practically back-to-back “ houses, as they have only two small windows each (quite inadequate to “ secure through-and-through ventilation) in the back wall, opening on “ adjoining land and belonging to a different owner. Their erection is “ contrary to your bye-laws, which are 27 years old, as they have no space at “ their rear belonging to them, and they are contiguous by their sides to each “ other and to other buildings. They are, therefore, contrary to bye-law “ No. 20, which requires that ‘every building to be erected and used as a “ ‘dwelling-house shall have in the rear, or at the side thereof, an open space “ ‘exclusively belonging thereto, to the extent at least of 150 square feet, free “ ‘from any erection thereon above the level of the ground.’ ”

Mr. Hislop suggests to the Knaresborough Rural District Council, “ the “ extreme advisability of adopting a uniform system of Bye-laws for the whole “ of the district. Apart from the seeming unfairness of giving to one portion “ of the population the benefit of wise laws which you deny to others, there is “ urgent need for their adoption all over the district.” Mr. Webster, in his Slaithwaite Annual Report, indicates the proper line of action. He writes :— “ Great care is still manifested by the members of the Urban District Council, “ that all plans, passed by them, conform fully to all the requirements of the “ Public Health Act and bye-laws, in regard to air space and ventilation ; and, “ I believe that, in the future, the Council will insist upon double drains, one “ to take the sewage into the sewage pipes, and the other to take roof and “ top water into the surface drains.”

Adoptive Acts.—It would appear that few of the medical officers of health are provided by their Authorities with copies of these Acts of Parliament, *i.e.*, The Infectious Disease (Notification) Act, 1889 (see page 37), The Infectious Disease (Prevention) Act, 1890, and The Public Health Acts Amendment Act, 1890. The provisions of the first named are now well known and in force in nearly every district in the Administrative County. With regard to the other two Acts it may be of benefit to here indicate the most important items :—

THE INFECTIOUS DISEASE (PREVENTION) ACT, 1890, has already been adopted in 55 districts in the Riding (see Appendix, Table III., Col. 4). Any urban or rural sanitary authority may adopt all or any of its provisions, which relate to—

- (Sec. 4) Increased supervision of dairies within and without the district.
- (5 & 6) Cleansing and disinfecting of premises and bedding.
- (7) Illegality of leaving recently infected houses without disinfection or notice to the owner.
- (8, 9 & 10) Dealing with the retention, removal, and burial of dead bodies.
- (11) Disinfection of public conveyances.
- (12) Detention of infected persons.
- (13) Infectious rubbish to be disinfected before being thrown into ashpit.
- (14) Notice of certain provisions (Secs. 7 & 13) to be given to occupier.
- (15) Free temporary shelter to be provided when disinfecting a house.

THE PUBLIC HEALTH ACTS AMENDMENT ACT, 1890, has been adopted by 66 Sanitary Authorities in the West Riding (see Appendix, Table III., Col. 5). An urban sanitary authority may adopt all of its adoptive parts, and a rural authority may adopt Part III. as far as applicable, while the Local Government Board have power to extend any of the provisions of the Act to rural districts. The Act deals with the following :—

- (Secs. 16, 17) Injurious matter, chemical refuse or steam or waste liquid over 110° F. not to pass into sewers so as to obstruct the flow or be injurious to health.
- (20, 22) Sanitary conveniences for the public, and for manufactories and workshops.
- (21) Penalty for fouling of conveniences used in common.
- (23, 26) Power to make bye-laws (see Table, page 60).
- (24, 25) Dealing with premises over privies, or on ground made up of offensive matter.
- (27) Keeping clean of common courts and passages.
- (28) Extension of definition of unsound meat in the Public Health Act, 1875, to all articles intended for the food of man.
- (29, 30, 31) Dealing with slaughter houses.

Dairies, Cowsheds, and Milkshops.—The importance of these premises in connection with the public health becomes every year more apparent, and consumers are gradually awakening to the dangers lurking in contaminated milk. No less than 69 outbreaks of epidemic disease in this country have been distinctly traced to milk, and it has been demonstrated that the tubercle of man and bovines is intercommunicable. Milk is one of those

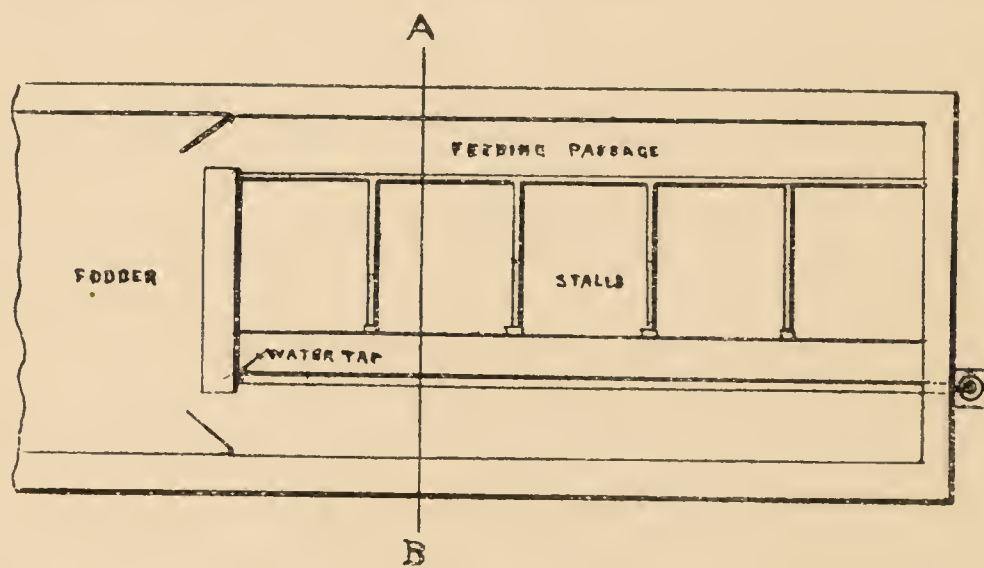
articles of food which, if exposed to foul gases, the effluvia of decaying matter or to infection from persons, is readily contaminated, and it acts as an excellent nidus for the multiplication of the poison absorbed. Still, the impression gathered from an analysis of the reports of the Local Medical Officers of Health is that there is a decided apathy and indifference amongst Local Authorities in the enforcement of the regulations for the proper management of Dairies, Cowsheds and Milkshops. The Order of 1885 is intended to secure the registration of all premises where milk is sold, and it is the duty of the Sanitary Authority to make regulations for the inspection of cattle, and for prescribing and regulating the lighting, ventilation, cleansing, drainage, and water supply for clearing and maintaining cleanliness and every care against infection or contamination of the milk.

In many districts no regulations have been framed, and others have regulations but do not enforce them beyond, perhaps, whitewashing—hence the Order has been dubbed the “Whitewashing Order.”

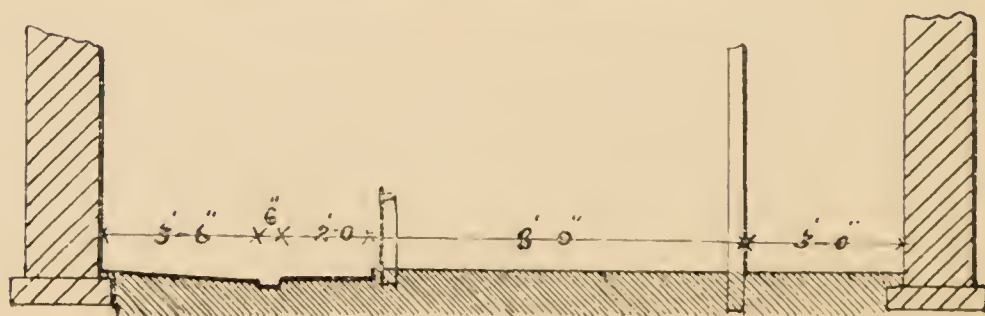
In few reports is there any detail beyond a general statement that they have been inspected and found satisfactory or otherwise. It may be that structural difficulties seem to overawe the officials; still, drainage, so frequently in a bad condition, might easily be remedied, light could be provided or increased, and cleanliness insisted upon. There are, indeed, sufficient grounds to vigorously tackle these premises for the protection of public health, and also on behalf of the dairy farmers and milk purveyors themselves.

The official undertaking this work should be prepared with a sketch (somewhat after the fashion of the one given below) to overcome the argument, so often advanced, that “it is easier said than done.”

COWSHEDS.—SUGGESTED ARRANGEMENT OF FLOOR SPACE.



Enlarged Section on A.B



The floor should be made of concrete or flags set in cement. Some prefer the stalls to be clay floored. The dimensions indicated above are those generally adopted in good designs. In existing buildings, where space is limited, the feeding passage might be curtailed or left out, but it should be present in all new buildings.

There should be little difficulty with whitewashing and the renovation of the floors, and in the admission of light, or provision of proper water supply. These are essentials which ought always to be *enforced*. Some difficulty comes with ventilation, and in giving advice one should be careful to indicate means which will not cause cold air to pass directly on to the cows. The gratings, say 27in. by 9in. for every two cows, should be placed under the eaves, and a louvre should, if possible, be erected on the ridge. Until decisive action is taken it will be impossible to report satisfactorily on these premises.

One word regarding the tuberculin test for tuberculosis in cattle. This is a simple test which experience proves has yielded highly satisfactory results, though it is not altogether infallible. In many of the American States the authorities carry out a regular system of examining all cattle and testing them by tuberculin. It is a liquid obtained by the concentration of glycerinized bouillon in which the germs of tuberculosis have been grown. In sound cows its injection has no effect, but in a tuberculous animal it produces symptoms indicative of the disease, so that in tuberculin we have a means not only of ascertaining the soundness of the animals yielding the milk supply or about to be used as food, but an agent whereby stock breeders and farmers may largely eradicate tuberculosis from their animals.

Mr. Greenwood, of Ossett, writes:—"This disease (tuberculosis) is known to be very common in the cow, and may, undoubtedly, be transmitted to the human species through the milk of tuberculous animals. The character of the cow disease which renders the milk dangerous has yet to be determined, though it has been ascertained that when the udder is affected the danger is undoubted."

Smoke Abatement.—All right-minded men cannot but admit that there is an unnecessary amount of black smoke at present being emitted from the chimneys of our factories and workshops. Space prevents any lengthy remarks as to what extent and in what respects it is injurious, but, at any rate, we have all experienced its interference with personal comfort. Its destructive influence, too, on our buildings, the dirty streets, interception of the sun's rays—nature's own disinfectant, consequent restriction of the ventilation of our dwellings, a certain amount of prevalent lung disease, and the ravages caused on plant life are all the result of this unnecessary evil. This question of atmospheric impurity does not appear, in spite of much talk, to reach any degree of practical solution. River pollution, and the emission of noxious gases from alkali works, etc., are now placed in the hands of special officers outside the local authority, and, seeing that it has been incontestably proved that smoke is a waste and a nuisance, it is a question whether the time has not arrived when this matter should also be placed in the hands of an authority not locally concerned. The remedy against the emission of black smoke, I should say, would be easier than the purification of rivers.

In the 1896 Reports, 516 observations are noted, but in many instances, indefinite information is given as to the number of observations made. Only two prosecutions followed. Several of the reports, however record the serving of precautionary notices on offenders.

Mr. Brown, in the Greetland Report, thinks that “at present we are all
“suffering more or less from this nuisance. The amount of smoke and soot
“from the mill chimneys has become very troublesome. If smoke consumers
“were used, they would remove the nuisance, if not entirely, at least very
“considerably. Under the present circumstances it is impossible for dwellings
“to be properly ventilated, for no sooner is a door or window opened for the
“purpose of ventilation, than in rushes the smoke and soot from outside. This
“causes people to refrain from opening their windows unless compelled to
“do so. Sunday is really the only day when ventilation may be carried on
“with impunity, the outside atmosphere, on other days, being so overcharged
“with soot.”

Dr. Huie is of opinion that “the great cause of lung disease in
“Rishworth is to be found in the very great amount of smoke in the atmos-
“phere arising from the factories in this and surrounding districts, and the
“great manufacturing towns in the neighbourhood. This is an undoubted
“predisposing cause of lung disease in the district.”

Dr. Denning, in the report to the Elland Urban District Council, writes :
—“The smoke nuisance continues unabated, and in some parts of the town
“is intolerable. The health and comfort of the people ought surely not to be
“jeopardized or destroyed to save a trifling expenditure of money to the
“manufacturer, especially as it has been proved time after time that this
“nuisance can be easily remedied, and that the initial cost of doing so is
“soon repaid by the saving in the consumption of coal.”

Slaughter Houses throughout the West Riding do not appear, judging from the scanty remarks concerning them, to receive sufficient attention. They are briefly noted in 97 of the reports having reference to 833 premises. They are described as being kept in fair order, but needing more or less supervision on the part of the Sanitary Authority. In a number of the districts the bye-laws with regard to slaughter houses are not enforced. Many of the premises appear to be unregistered, and many others which are registered have no legible notice upon some conspicuous place bearing the words—“Licensed or Registered Slaughter House,” as required by the law. In some reports the erection of public abattoirs is strongly urged. The following general extracts from the reports will give an idea with regard to slaughter house sanitation in the Riding.

HALIFAX R.—“There are about six slaughter houses in your district
“which are not licensed or registered. Some of them are not satisfactory,
“and, should, in my opinion, be controlled by Bye-laws providing for such
“licensing and registering and for the usual requirements as to cleanliness,
“lime washing, disposal of offal, etc., etc. If the slaughter houses were
“licensed in this way we should be much better able to control the sale of
“unsound meat.”

GOLCAR.—“Slaughter houses.—These have been several times visited during the year, and are kept in a generally good and clean condition. In one instance where the flooring was bad we insisted upon a new one of concrete being laid down. Two new ones have, upon my certificate, been licensed during the year. They were both built and arranged in conformity with the Model Bye-laws of the Local Government Board.”

KEIGHLEY BORO'.—“There are upwards of a dozen and a half slaughter houses in the Borough, and although these are inspected as frequently as possible, no one can say that such inspections are commensurate with the requirements. Comparisons are said to be odious, but still a good purpose may be served by noting that at Shipley, Ilkley, and Brighouse—towns all less than Keighley—there are public abattoirs where efficient supervision and inspection can be made, and at Brighouse a practical man has been appointed to devote his whole time to the duties of the public slaughter house.”

ILKLEY.—“The abolition of the private slaughter houses, and their concentration in the new public abattoir removes many sources of general annoyance, and actual sources of danger to health in the districts they formerly occupied, and though this great sanitary achievement has not been brought about without much trouble and cost, the consequent gain to the public health will be of a lasting character, and can scarcely be over-estimated.”

SHIPLEY.—Public Abattoirs.—“As the whole of the slaughtering of the district is now carried on here, the meat is regularly and carefully inspected, and a great protection is afforded to the public thereby. The waiting room provided for the butchers is very much appreciated by them. There have been seven seizures of animals at the slaughter houses during the year, the carcasses being destroyed. The owners having invited inspection, no proceedings were instituted.”

WHITWOOD.—“The question of the advisability of providing public slaughter houses is one well worthy of attention. The houses at present used appear to be well conducted, but they cannot but prove an annoyance to their immediate neighbours.”

SKIPTON.—“The existing slaughter houses are situated in various parts of the town, and are for the most part buildings which have been adapted to their present use, and not constructed in accordance with modern requirements, and in consequence of their near proximity to dwelling houses, unless very cleanly kept, which is in many instances impossible, not infrequently become a source of nuisance to the inhabitants of adjoining property. This year the Council considered the desirability of providing a public abattoir, and doing away with the existing slaughter houses, and a sub-committee is now at work endeavouring to arrange for a suitable site. The advantages of having one centre suitably placed, sanitarily constructed, and fitted with all the modern appliances, where all the slaughtering is done with increased facilities afforded for meat inspection, are manifest.”

Dr. Scatterty, in the report to the Keighley Corporation, writes :—“Your regulation requiring all butchers to give me notice whenever they find anything slaughtered to be diseased, has been strictly observed. Fifteen carcasses of beef slightly affected with tuberculosis thus came under my notice during the year.”

Dwellings.—The lungs of each person are constantly penetrated by an atmosphere which momentarily exercises a healthy or unhealthy influence over the whole human body according to the conditions and place under which the inspired air is received. Any arrangement of a building which prevents a change of air and cuts off ventilation must lead to vitiation of the atmosphere. There is no doubt whatever that the ill-ventilated and overcrowded room is a powerful element in the causation of chest diseases. If, for example, a bedroom is without a chimney it has clearly lost a considerable amount of ventilation capacity, and such rooms when occupied usually smell more or less.

Respired air, insensible perspiration of the individual, decomposition, and dampness are noted in some of the reports as powerful promoters of the impurity of air.

The Housing of the Working Classes Act, 1890, imposes certain important duties upon local authorities which all health officers should know, and which will be found in Sections 30, 32, 45 and 52 of the Act.

The following extracts from the Annual Reports for 1896 indicate that evils of much magnitude are the necessary consequence of inattention to dwellings. Mr. Jackson writes :—“ The amount of old property in the Wakefield Rural District which must be put right is alarming. The inhabitants of the district would greatly facilitate the work of the sanitary officials, and thereby do a great deal towards improving the health of the district, if they would give notice of the existence of the following matters ” :—

“ Leaky roofs, deficient spouting and fall-pipes, wet cellars, absence of proper drainage, absence or deficiency of ashpit, ditto of privies, untrapped sinks, faulty sink-pipes, overcrowding.”

Dr. Smailes, of South Crosland, connects many diseases with insanitary property :—“ Many of the houses are old and badly constructed, and in some parts deserve wholesale condemnation. We have brought before you from time to time such of the worst as we were able to condemn, and have had such repairs done as made them more habitable and healthy. It ought to be remembered that damp alone is in itself conducive to many maladies which it is our aim to remove.”

At Rishworth, Dr. Huie is satisfied that “ rheumatic disorders arise from the cold and damp which exists here for so great a part of the year, and from the fact that a large number of the dwellings are built as it were into the hillsides, so that the back part of the houses are really underground, and the roofs are on a level with the ground at the back ; and this is not likely to be remedied, as few new houses are built, so many substantial old stone houses existing.”

Dr. Robinson indicates commendable action at Rotherham. “ There can be no question,” he writes, “ as to the wretched condition of much of the old property in the borough. Up to the present time the health

“authorities have been chary of taking any steps owing to the overcrowded state of the borough, and the impossibility of getting houses elsewhere; but I am now empowered to state that they intend to let the owners of insanitary cottages know that they (the landlords) have some other duty than that of collecting rents. The houses that are unfit for human habitation are well known to the authorities, and the owners may as well take the hint now, as the health authorities are determined to take up a strong position. During the last year plans for nearly 300 dwelling houses—mostly for the working classes—have been passed by the Improvements Committee, so it is obvious that there are now sufficient new houses to accommodate those tenants who may be displaced. In the course of the past year 76 houses have been condemned as unfit for human occupation.”

In discussing the prevalence of consumption, Dr. Foster says in the Shipley Report:—“The improvement of sanitation with regard to ventilation and overcrowding will be one of the great factors in the extermination of this insidious disease.”

Dr. Meredith Young, in the Brighouse Report, records the relative effect of dwellings on infectious disease:—“In connection with every case of notified disease, inquiries were made as to the construction of the house, and I append a table from which it will appear that through houses have a decided advantage over back-to-back houses, in that cases of infectious disease are not nearly so liable to spread to other members of the family.

“Out of 46 cases of scarlet fever, 24 occurred in back-to-back houses, 14 of these 24 cases were single ones,—that is, were not followed by others in the same house,—but ten out of the 24 were cases which followed after previous cases. In through houses 22 cases of the same disease occurred, and 20 of these were not followed by secondary cases, only two were secondary cases—that is, followed after other cases in the same house,—and these both occurred in one house. Taking typhoid fever as a further example, 30 cases of this disease occurred in the two classes of houses combined. In back-to-back houses seven out of a total of 20 cases were not followed by others, but 13 cases were found to follow or be followed by others. In through houses 10 cases occurred and eight of these were single cases not followed by others; in one instance only did two cases occur consecutively.”

Dr. Johnstone, of Ilkley, advances a good suggestion which he is acting upon:—“As the houses increase in number and tenants keep constantly taking fresh houses, the hint thrown out in one of my former reports, that prior to the occupation of any house its sanitary condition be tested, and if need be corrected, before they are actually occupied, is being largely acted upon.”

Mr. Wills, of Kiveton Park Rural District, regards overcrowding as of the most serious import:—“Seeing these things, and moreover that the statistics which I drew from the death rate of the previous ten years indicated a remarkably heavy mortality from pulmonary diseases and

“tubercular diseases, which would be chiefly influenced by overcrowding, viz., 234 per 1,000 deaths from pulmonary diseases, and 138 per 1,000 total deaths from tubercular diseases, it is remarkable that any families should be found living in the deplorable conditions we heard of as existing, for I believe there is no evil in a sanitary sense worse than overcrowding: it destroys the soundness of mind and body rapidly.

“Some of the worst cases have been dealt with, but I am sorry to report that some remain as they were. The owners of the land have offered to let building land on lease since the enquiry. For the sake of the children I consider that notice should again be given to abate these nuisances within a given time in cases where they remain, especially in those instances where the space is less than 300 cubic feet for sleeping, though I consider this less than half sufficient for an adult, and there is no nuisance so serious, both as threatening the future welfare of the children and the health and working power of adults.”

Schools.—Here, above all other places, the sanitary arrangements should be of the most efficient, principally because of the effect on the health of the children, but also to some extent because of the educative influences which proper sanitary arrangements are bound to have on the minds of the scholars, and the effect upon their after lives. Some revelations in the reports of the medical officers of health, and also personal inspection, show that school sanitation is very far from perfect, as, for example, at Golcar, where Dr. Webster reports:—“In the case of the Wellhouse Board School, which I visited along with your Inspector, we found drains opening into the floor of the buildings apparently trapped, but, in some instances, with the outlet of the trap a foot or more from the first drain pipe. The School Board readily undertook to alter this, and the alterations were made and carried out to our satisfaction.

At Eccleshill, Dr. Pitney Aston writes:—“The schools must be regarded as having been immensely improved to what they were when I reported them in 1894. The Pottery Lane Board Schools were the last to be taken in hand, and were found to be in a disgraceful condition. Defective drains were found going under the school room floors, and some of the fall pipes went direct to the drains and main sewers, while others had gullies which had been flagged over, and, therefore, quite inaccessible, so that they were foul and blocked. The drains were found to have defective joints in all directions. The schoolmaster’s w.c. was indescribably beastly, and all these frightfully insanitary conditions have gone on for years without objection being taken by the Educational Inspectors, in which respect Eccleshill is only typical of what, to my knowledge, has obtained more or less generally.”

Mr. Swallow is able to report that “all the schools in the Penistone Rural District have been cleansed and whitewashed during the year with the exception of the endowed school at Silkstone Healds. I consider that painting and limewashing should be done each year.”

Although school ventilation, as has already been said, is often quite unsatisfactory, the nuisances arising from insanitary out-conveniences demand the most pressing attention. In urban districts where a plentiful water supply

can be obtained the most satisfactory system is undoubtedly water-carriage, but in rural districts where there is little or perhaps no water to spare the question of cost and labour comes into account, and, with little regard for the health of the scholars, the abominable midden privy has been adopted, whereas earth closets and tubs, though not perfect, would be a great improvement.

In many of the reports the closure of schools at the instance of the Medical Officer of Health is recorded, and this step imputes, indirectly, that the school has been the agent of dissemination. This is chiefly the case with regard to measles and scarlet fever. This school closure is becoming a serious matter in its interference with education, and will apparently remain so until the care now intermittently taken becomes constant and methodical on the part of school officers. In my opinion every absentee should be re-admitted to the school by a teacher specially delegated for the purpose, who would very soon become able to detect those causes of absence which ought to be reported to the Health Officer.

Meteorology.—That atmosphere and earth temperature has an important influence on the public health no one can now dispute. It is notably seen in connection with the diarrhoeal mortality and prevalence. The rainfall and air movements have also an appreciable effect on that disease, while the seasonable distribution of sickness, as expressed in the various quarters of the year, clearly shows climatic effect on general diseases of the respiratory organs.

Dr. Sadler (Barnsley) writes :—“ The year ending with December 31st, 1896, was distinguished on the whole by a moderate temperature, the last and first quarters were comparatively mild, with rather less than the average number of frosty days ; what hot weather there was came mainly in May, June, and July. The rainfall was about an inch and a half below the average for the preceding 25 years, and unequally distributed over the year, having been deficient during the first five months and in July, whilst from August 21st to the end of October rain fell nearly every day.”

“ The most important result of this meteorological condition was that the temperature of the subsoil was much lower in the autumn months than in 1895 and 1893, only reaching 63 degrees at a depth of four feet on 59 days between June 1st and August 28th, instead of 85 as in 1893, with the effect of considerable diminution of the usual autumnal epidemic of diarrhoea, and a corresponding diminution of the amount of typhoid fever which usually follows on a prevalence of diarrhoea.”

It is recorded in the Worsborough Report that “ the weather during the year ending December 31st, 1896, was much more moderate in its character than in 1895, having been mild in its first and last quarters, with very little hot weather except in June and July, with rather less than the average rainfall, drier than usual until June, but persistently wet from the 20th of August to the end of October, so keeping down the temperature of the subsoil in the Autumn months, and thereby preventing any serious epidemic of diarrhoea, such as is often followed in this part of the country by an increased prevalence of typhoid fever. We had fewer deaths from acute lung diseases,

“probably because the winter months were milder, and such influenza as there was took a milder form than in previous years.” Dr. Smailes discusses the effect of soil upon climate at South Crosland, where “the soil is of a sandy character, under which is sandstone rock, generally millstone grit, in some of the lower parts there is a stratum of tenacious clay, the soil and substratum is rententive of moisture, and consequently the climate is damp and cold and conducive to many of those maladies of a tubercular character and generally pulmonary complaints, which form so large a part of the mortality returns of this neighbourhood.”

More or less information as to rainfall, sunshine, air temperature, earth temperature, and barometric pressure is given in fifteen of the reports only.

The following are the records of rainfall as entered in such reports :—

Batley	...	21·5 inches	Rishworth	...	40·3 inches.
Holmfirth	...	52·5 „	Wath	...	20·3 „
Horsforth	...	34·5 „	Kiveton Park R.		23·7 „
Ilkley	...	34·0 „	Rotherham R.		25·0 „
Mythlomroyd		38·4 „	Saddleworth R.		44·4 „
Osset	...	24·6 „	Sedbergh R.		49·8 „
Pudsey	...	30·2 „			

The following number of wet days occurred at the places mentioned :—
Horsforth 193, Pudsey 185, Wath 162, and Kiveton Park R. 181.

In the appendix (see page 85) will be found further details as to rainfall in the Riding, derived from other sources.

Workshops.—The inspection of workshops is important, because much of the intemperance in our populous districts is ascribed to the depressing atmosphere existing in heated and crowded workshops. As in many other districts, so in the West Riding, not very much has been done in this connection, though there is evidence in the Annual Reports for 1896 of increasing attention and more frequent visitation of these premises.

The Factory and Workshops Act of 1895, which amends and extends the law relating to factories and workshops in many important ways, came into operation on the 1st of January, 1896. Section I. of that Act directs that a workshop shall, for the purposes of the law relating to public health, be deemed to be so overcrowded as to be dangerous and injurious to the health of the persons employed therein, unless to every person there is at least 250 (or during any period of overtime, 400) cubic feet of space. This section is especially useful in its application to dressmaking establishments, where, owing to irregular demands, there is a tendency to overcrowding and overtime work. By Section III., Sanitary Authorities are required to inform the Inspector of Factories of the proceedings taken, in consequence of any notice given by him under the fourth section of the Act of 1878, with respect to neglect or default in relation to drains, water closets, earth closets, privies, ashpits, water supply or other nuisance. By section 21 of the 1895 Act, laundries are brought within the general scope of the law, relating to factories and workshops. As regards sanitary provisions, the Factory Acts are to have effect as if every laundry in which steam, water, or other mechanical power

is used were a factory and every other laundry were a workshop. Attention should also be given to section 6 of the new Act, the object of which is to protect the public from danger of infection from clothes being made, cleansed, or repaired in dwelling-houses (or buildings occupied therewith) in which cases of scarlet fever or small pox exist.

Bakehouses are said in about 45 of the reports to have been kept under supervision. These reports refer to 283 bakehouses, in a more or less satisfactory condition. In many districts in the West Riding, bread is made at home and sold in small quantities to the neighbours, but even in those districts where bakehouses do exist, little information is given in the local reports beyond a general statement that inspection had been made, and they were found in such and such a condition.

Some important amendments in the law relating to bakehouses have recently been made by the Factories and Workshops Act of 1895 just referred to. By section 27 of the new Act, the provisions of sections 34 and 35 of the 1878 Act are extended to every bakehouse. Again, section 15 of the Act of 1883 is made to apply without limitation as to the occupancy of any bakehouse, while the third sub-section of the same section provides that a place underground shall not be used as a bakehouse, unless it was so used at the commencing of the Act, *i.e.*, 1st January, 1896.

Canal Boats.—In those districts in which canals exist, the Regulations under the Canal Boats Acts have been carried out, but it would appear that very few legal notices were served during 1896, which we may, perhaps, take as an indication of an improved hygienic condition in canal boats.

Record is made of 1461 visits during 1896, but few of the reports give any detail, though this is a subject which demands much supervision in those districts having canal traffic. Dr. J. Mitchell Wilson in the Goole report mentions that no less than 735 men, women and children were found in the 232 boats inspected there during 1896.

Offensive Trades are noted in 32 Reports dealing with 97 premises, but usually without further comment than to state that they are kept in a fair condition. The nuisances that have been complained of arise invariably from the improper storage of offensive materials, and also from the offensive vapours emitted during boiling, without adopting such means of prevention as are used in the best regulated places.

Common Lodging Houses are commented upon in 35 Reports having reference to 141 premises. In only one instance is the sanitary condition said to be very good, while in many of the Reports the scanty remarks are suggestive of damning with faint praise. Two prosecutions took place for the offence of keeping a common lodging house without registration—one in Doncaster Borough and the other in Skipton Rural District.

Burial Grounds.—The references to burial grounds are few. Extensions are recorded at Bingley and Wath, while the question of extended provision is said to be under consideration at Greasborough and Mytholmroyd, and also at Salterforth, in the Skipton Rural District. One graveyard is said

to be nearly full at Meltham, another at Gisburn, Chapel-le-dale, and Horton-in-Ribblesdale. The churchyard at Fewston has been closed for burials.

Sale of Food and Drugs Acts.—Samples were purchased by the local sanitary inspectors in 55 districts during 1896, as follows:—

Baildon - - - 4	Hebden Bridge - 4	Sedbergh - - 3
Barnsley Borough - 12	Heckmondwike - 4	Shelf - - - 10
Barnsley R. - - 3	Hemsworth R. - 8	Shipley - - - 4
Brighouse Borough - 11	Holmfirth - - 1	Skelmanthorpe - 8
Castleford - - 3	Honley - - - 20	Skipton - - - 6
Clayton West - - 4	Horbury - - 9	Soothill Nether - 6
Cleckheaton - - 4	Hoyland Nether - 3	Southowram - - 1
Denholme - - 15	Hunslet R. - - 5	Sowerby Bridge - 4
*Dewsbury Borough - 30	Idle - - - 3	Soyland - - - 2
Dodworth - - 1	Ilkley - - - 13	Springhead - - 7
*Doncaster Borough 16	Leeds R. - - 1	Swinton - - - 1
Eccleshill - - 1	Meltham - - 13	Thorne - - - 11
Emley - - - 4	Methley - - 1	Thornton - - - 8
Golcar - - - 9	Monk Bretton - 6	Todmorden Borough- 3
Gomersal - - 2	Ossett - - - 3	*Wakefield City - 39
Greetland - - 4	Oxenhope - - 1	Wakefield R. - - 62
Handsworth - - 3	*Rotherham Borough 28	Wilsden - - - 6
Harrogate Borough - 26	Rothwell - - 1	
Haworth - - 7	Saddleworth- - 6	

The Boroughs of Dewsbury, Doncaster, Rotherham, and Wakefield are not within the "County jurisdiction" for the purposes of the Sale of Food and Drugs Acts.

Unsound Food.—Seizures under the Public Health Act, 1875, were made on eleven occasions in six sanitary districts only, but in several districts very desirable arrangements have been made whereby the butchers willingly consult the medical officers of health in regard to suspicious carcasses. Under this arrangement formal seizure and condemnation by Magistrates' Order are obviated, unsound carcasses being destroyed by consent.

In conclusion, there are many lines on which the future sanitary improvement of the County might proceed, but I will only here note those more urgently necessary outside the essentials of proper water supply and drainage.

- (1) Abolition of the present offensive system of privy middens.
- (2) Adoption of public scavenging in populous places.
- (3) Provision of isolation hospital accommodation.
- (4) Renovation of the faulty cowsheds, and reformation of the conditions under which milch cows are kept.
- (5) Enforcement of the Model Bye-laws where adopted, and their adoption where not in force.

JAMES ROBT. KAYE,
County Medical Officer,

Wakefield,
November, 1897.

APPENDIX.

Money borrowed by Local Sanitary Authorities.—

The total amount of the loans for various purposes sanctioned in recent years by the Local Government Board, on the application of local authorities within the Administrative County is shown in the next table.

Loans sanctioned 1881-95.

YEAR.	PURPOSE.			
	Sewerage and Sewage Disposal.	Water.	Hospital.	Other.
1881	76,923	43,045	—	48,499
1882	41,148	42,767	1,200	13,993
1883	22,245	7,518	—	14,461
1884	31,460	5,528	—	46,074
1885	28,460	16,510	—	20,112
1886	11,520	17,335	—	50,380
1887	31,652	15,452	—	39,872
1888	14,110	9,130	5,500	90,434
1889	25,933	53,479	—	71,968
1890	9,969	57,030	8,500	24,505
1891	64,035	63,205	8,300	88,518
1892	77,323	16,180	2,005	118,856
1893	101,143	27,250	9,150	140,639
1894	202,839	56,328	30,386	117,306
1895	289,370	81,176	4,135	255,110

The following Table shows the authorities that have received sanction for such loans :—

Loans sanctioned during 1895.

I.—Urban Districts.		Purpose.	Years	Amount.
				£
Baildon	...	Water supply	30	260
"	...	Sewage disposal	30	245
Barnoldswick	...	Gasworks	21	1500
Batley Borough	...	Street improvement	30	4400
Brighouse Borough	...	Land for sewage disposal	50	15000
"	...	Sewage disposal	15	2600
"	...	Sewerage and disposal	30	77400

I.—Urban Districts.	Purpose.	Years	Amount.
			£
Calverley ...	Repayment of loan	28	720
„ ...	Water supply	30	1484
Cleckheaton ...	Gas	20	1638
Denby and Cumberworth ...	Water supply	30	1650
Dewsbury Borough ...	Market	50	450
„ ...	Street improvement	48	7874
„ ...	Steam fire engine	9	450
„ ...	Street improvement	20	6615
„ ...	Town hall buildings	20	16000
Dodworth ...	Sewerage	20	200
Drighlington ...	Street improvement	20	1200
Emley ...	Sewerage and disposal	30	3000
Golcar ...	Street improvement, etc.	25	1500
Goole ...	Market	30	3000
„ ...	Repayment of loan	1	57400
Handsworth ...	Water supply	30	600
Harrogate Borough ...	Depôt	30	3000
„ ...	Fire brigade station	30	400
„ ...	Fire engine and escape	10	700
„ ...	Market	30	280
„ ...	„	30	500
„ ...	Pleasure grounds	10	1810
„ ...	Public offices	30	570
„ ...	Pump room	30	900
„ ...	Purchase of Crescent Estate	50	5100
„ ...	Victoria baths	25	2230
„ ...	Sewerage and disposal	30	6555
„ ...	Shed for steam road roller	30	100
„ ...	Street improvement	20	2560
„ ...	Sulphur water pumping	10	120
Haworth ...	Gas undertaking	30	449
Hebden Bridge ...	Land for offices	50	513
„ ...	Street improvement	50	635
„ ...	Offices	28	3250
„ ...	Purposes of P. H. Act, 1875	2	2352
Heckmondwike ...	Water supply	30	2000
Hipperholme ...	Water supply	20	200
Hoyland Nether ...	Depôt	30	500
Ilkley ...	Street improvement	25	2032
Keighley Borough ...	Approach to bridge	20	2832
„ ...	„	50	650
„ ...	Depôt	30	2000

I.—Urban Districts.		Purpose.	Years	Amount.
				£
Keighley Borough	...	Gasworks	30	7000
"	...	"	25	34000
"	...	Improvement of bridge	15	500
"	...	Street improvement	50	18818
"	...	"	10	2472
"	...	Scheme under Provisional Order of 1892	40	6250
"	...	Street improvement	20	760
"	...	"	20	4485
Knaresborough and Tentergate	...	Sewerage and disposal	30	3000
"	...	Water supply	30	1350
"	...	"	10	450
Knottingley	...	"	10	300
"	...	"	30	7200
Mirfield	...	New bridge and road	20	1000
Morley Borough	...	Costs of Local Act of 1890	—	6000
"	...	Land for dépôt	50	2400
"	...	Street improvement	50	827
"	...	Land for water undertaking	50	8500
"	...	Water supply	30	27500
"	...	Water supply	30	2000
North Bierley	...	Recreation ground	30	450
"	...	Street improvement	2	800
Oxenhope	...	Sewerage and disposal	30	7000
Penistone	...	Water supply	30	600
Pontefract Borough	...	Street improvement	50	3973
"	...	Lighting	10	66
"	...	Sewerage	30	60
"	...	Steam fire engine	10	710
"	...	Street improvement	20	1196
"	...	Water supply	29	9477
Rawmarsh	...	Land for sewage disposal	50	2700
"	...	Sewerage and disposal	30	13450
"	...	Sewerage and disposal	15	1850
Rothwell	...	Water supply	30	725
Selby	...	Gasworks	10	775
"	...	"	28	270
"	...	"	20	544
"	...	Sewerage	30	950
"	...	Street improvement	20	500
"	...	Water supply	30	260
"	...	Water supply	30	590

I.—Urban Districts.	Purpose.	Years	Amount.
			£
Silsden	Land for sewage disposal	50	1870
"	Sewerage and disposal	30	8776
Skipton	Land for water supply	—	1500
"	Steam road roller and shed	10	400
Slaithwaite	Land for sewage disposal	50	2500
"	Sewerage and disposal	30	9200
"	"	10	750
Soothill Nether	Sewerage	30	1570
"	Street improvement	30	450
South Crosland	"	26	1007
Sowerby Bridge	Gas supply	30	3759
"	"	15	1500
"	"	15	1150
Thornhill	Hospital	30	3503
"	Sewerage and disposal	30	2000
"	"	30	10000
Todmorden	Hospital	45	650
"	Refuse destructor	20	1400
Tong	Land for offices	50	143
"	"	5	357
"	Public lighting	10	250
"	Scavenging plant	10	50
"	Street improvement	18	990
Wakefield City	Land for sewage disposal	50	13629
"	Sewage disposal	30	1000
"	"	15	6600
"	Sewerage and disposal	30	55323
"	"	20	6010
"	Street improvement	20	7200
Whitwood	Repayment of loans	17	3966
"	Street improvement	20	2000
Worsborough	Sewage disposal	21	900

II.—Rural Districts and Contributory Places.	Purpose.	Years	Amount.
			£
Barnsley (<i>Stainborough</i>) ...	Water supply	15	1900
Doncaster (<i>Conisborough</i>) ...	Sewerage and disposal	30	1633
„ (<i>Denaby</i>) ...	„	30	165
„ (<i>Wheatley Special Drainage District</i>)	Sewerage	30	94
Goole (<i>Rawcliffe</i>) ...	„	30	1000
Hemsworth (<i>Havercroft</i>) ...	Water supply	30	1150
„ (<i>Hemsworth</i>)	„	4	430
„ „ ...	Sewerage and disposal	30	560
„ (<i>Ryhill</i>) ...	„	30	1000
„ „ ...	Water supply	30	1150
„ (<i>South Kirkby</i>) ...	Sewerage and disposal	30	250
Keighley (<i>Steeton</i>) ...	„	30	2650
„ (<i>Sutton</i>) ...	„	30	5400
Kiveton Park ...	Road roller, shed, etc.	15	362
Knaresborough (<i>Bilton</i>) ...	Sewerage and disposal	30	300
Pontefract (<i>Darrington</i>) ...	Land for sewage disposal	50	110
„ „ ...	Sewerage and disposal	30	1770
„ (<i>Glass Houghton</i>)	„	32	5000
Ripon (<i>Grewelthorpe</i>) ...	Water supply	30	1400
„ (<i>Kirkby Malzeard</i>) ...	„	30	1400
Sedbergh (<i>Sedbergh</i>) ...	„	30	400
Wakefield (<i>East Ardsley</i>) ...	Sewerage	30	800
„ (<i>Outwood</i>) ...	Sewerage and disposal	30	5033
„ (<i>Stanley</i>) ...	„	30	5967
Wharfedale (<i>Esholt</i>) ...	„	30	1500
„ „ ...	Land for sewage disposal	50	5000
Wortley (<i>Bradfield</i>) ...	Water supply	30	3700
„ (<i>Eccleshill</i>) ...	Sewerage	30	3000

III.—Joint Hospital Districts.	Purposes	Years	Amount.
			£
Brighouse Joint Hospital District	Land for hospital	3	900
„ „ ...	Hospital	20	6600

Provisional Orders granted and confirmed
during 1895.

District.	General Act.	Object.
Keighley Borough ...	Local Government Act, 1888	Extending the Borough
West Riding and Nottinghamshire	Ditto	Altering Boundaries
Wakefield City ...	Ditto	Extending the City
West Riding and East Riding	Ditto	Altering Boundaries
West Riding and North Riding	Ditto	Altering Boundaries
Batley Borough ...	Public Health Act, 1875...	Compulsory purchase
Greetland ...	Ditto	Compulsory purchase
Hemsworth R. (<i>Hemsworth</i>)	Ditto	Compulsory purchase
Pontefract R. (<i>Brother-ton</i>)	Ditto	Compulsory purchase
Skipton U. ...	Ditto	Altering a Local Act
Wath and North Rotherham Joint Hospital District	Ditto	Forming a United District under Section 279

Local Acts of Parliament.—Two Local Acts were obtained during 1895 :—Brighouse Corporation Act, 1895, and Hebden Bridge and Mytholmroyd Gas Board Act, 1895.

Bye-laws confirmed during 1895.

Subject.	Sanitary Districts.
Scavenging and Cleansing...	Eccleshill, Handsworth
Nuisances ...	Eccleshill, Handsworth, Kirkheaton, Stocksbridge
Common Lodging Houses ...	Eccleshill, Stocksbridge
Streets and Buildings ...	Eccleshill, Kirkheaton, Selby, Stocksbridge, Thornton
Slaughter Houses ...	Eccleshill, Handsworth, Stocksbridge
Pleasure Grounds ...	Keighley, Slaithwaite

BATHS AND WASHHOUSES ACT.—Bye-laws confirmed in respect of the urban district of Slaithwaite.

ALLOTMENTS ACTS.—Regulations confirmed for Skipton urban and Selby rural districts.

DAIRIES, COWSHEDS, AND MILKSHOPS ORDER.—No regulations made for West Riding districts during 1895.

Urban Powers conferred on Rural District Councils during 1895.

Rural Sanitary Authority.	Section of Public Health Act.	Contributory Places affected.
Knaresboro' ...	Public Health (Buildings in Streets) Act, 1888, Sec. 3	Bilton, Knaresborough Outer, Pannal, and Scriven
Settle ...	Section 44 portion relating to keeping of animals	The whole district
Wetherby ...	Section 42, portion relating to watering of streets	Clifford-with-Boston

Vaccination 1882-93. — Percentage of children (born in years stated) not accounted for up to January 31st in the second following year, as “successfully vaccinated,” “insusceptible of vaccination,” “had small pox,” or “died unvaccinated.”

	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893
England & Wales	4·8	5·1	5·5	5·8	6·4	7·1	6·0	9·9	11·3	13·4	14·9	11·7
London ...	6·6	6·5	6·8	7·0	7·8	9·0	7·4	11·6	13·9	16·4	18·4	14·1
West Riding ...	6·2	6·9	8·5	9·2	8·8	9·6	8·6	15·0	16·6	17·5	17·3	18·2
<i>Union :—</i>												
Barnsley ...	6·0	5·0	6·9	7·0	6·2	5·1	6·0	12·0	11·2	8·5	5·7	5·2
Bradford ...	5·1	4·9	6·1	7·1	8·0	10·5	7·3	20·6	24·3	31·0	22·7	20·8
Bramley ...	4·7	4·7	3·9	5·0	3·7	4·6	4·4	7·5	8·5	10·0	8·1	13·3
Dewsbury ...	12·6	20·0	37·6	47·2	37·5	29·6	34·2	37·3	39·1	32·5	37·7	41·3
Doncaster ...	2·3	2·8	2·6	4·1	4·5	4·1	3·6	6·6	7·2	8·6	10·6	11·5
Ecclesall Bierlow	5·7	4·7	4·2	4·9	4·0	1·9	4·0	4·0	5·1	5·6	5·5	4·8
Goole ...	3·3	2·6	3·3	4·3	3·1	2·1	3·1	5·2	4·4	4·8	7·3	6·9
Great Ouseburn	2·5	2·6	2·4	2·7	2·5	3·8	2·7	2·7	4·0	5·3	3·7	2·0
Halifax ...	4·7	7·7	11·6	9·8	13·0	28·2	14·0	60·0	69·6	74·9	74·3	78·5
Hemsworth ...	6·5	3·7	3·2	5·4	4·1	4·1	4·1	6·7	5·8	5·5	6·4	7·8
Holbeck ...	2·1	1·3	1·8	2·4	3·3	3·1	2·4	4·4	4·8	4·5	6·0	4·3
Huddersfield ...	0·9	1·0	1·4	1·3	1·3	1·2	1·3	2·2	1·6	2·5	2·3	2·9
Hunslet ...	5·8	4·8	6·1	4·6	3·1	3·2	4·3	3·9	4·0	3·3	3·8	3·7
Keighley ...	61·4	68·3	71·7	71·9	71·8	75·4	71·9	81·1	80·1	83·1	83·2	82·6
Knaresborough	6·1	6·2	5·1	5·6	6·0	6·2	5·8	11·3	12·7	16·9	19·1	15·2
Leeds ...	1·5	1·5	1·3	1·8	2·1	4·2	2·2	5·7	5·1	5·5	5·5	5·8
North Bierley ...	6·0	6·7	4·5	5·9	4·9	5·8	5·6	11·7	15·8	22·0	25·9	26·5
Pateley Bridge...	0·0	0·4	0·8	0·4	0·8	0·5	0·6	1·7	2·1	1·4	2·0	0·5
Penistone ...	2·4	3·2	2·4	4·4	2·1	3·5	3·1	3·1	2·3	3·9	3·2	2·2
Pontefract ...	4·8	5·2	4·4	4·9	5·0	4·3	4·8	5·2	5·0	3·8	4·8	5·8
Ripon ...	5·8	5·4	7·0	4·4	11·4	14·1	8·5	10·3	14·5	10·4	9·7	15·8
Rotherham ...	5·0	5·7	5·3	5·1	3·9	2·8	4·6	5·4	4·1	5·4	5·4	6·6
Saddleworth ...	2·9	3·3	3·5	2·9	4·0	3·2	3·4	14·2	38·8	69·0	72·0	74·4
Sedbergh ...	2·0	1·9	2·9	1·8	2·7	0·0	1·9	3·6	0·0	0·0	1·9	1·0
Selby ...	2·3	0·6	1·8	2·8	2·1	3·0	2·1	2·4	1·4	5·5	3·7	4·7
Settle ...	3·2	1·6	3·1	2·9	3·4	1·9	2·6	3·2	5·9	4·2	6·8	10·9
Sheffield ...	5·1	5·3	4·6	4·3	3·4	2·8	4·1	5·1	5·8	6·9	6·6	7·6
Skipton ...	3·9	5·5	5·2	6·3	8·8	10·6	7·3	13·8	22·7	25·8	38·4	46·2
Tadcaster ...	3·1	3·7	4·1	2·8	4·1	4·2	3·8	4·4	4·6	4·3	4·2	6·0
Thorne ...	3·6	4·6	5·5	10·6	6·7	7·4	7·0	8·8	9·3	12·5	15·8	10·9
Wakefield ...	3·6	3·1	3·4	3·7	3·9	3·0	3·4	5·1	4·6	5·3	5·5	6·0
Wetherby ...	10·8	9·4	9·9	11·3	7·4	5·9	8·6	7·1	6·2	8·7	10·4	10·4
Wharfedale ...	6·6	6·2	7·0	5·9	6·0	7·0	6·4	16·3	14·0	13·5	11·1	14·1
Wortley ...	4·8	5·7	3·8	3·8	3·6	2·4	3·9	5·5	7·0	5·9	6·9	9·0

Thus, in 1893 there were, in the West Riding Registration County, 77,500 births, of which 13,338, or 17·2 per cent., were “not accounted for” up to 31st January, 1895, and probably went to add to the unvaccinated popu-

lation: while 53,286, or 68·8 per cent., were successfully vaccinated. These are percentages of *births* only. The increments to the whole population represented by the same figures are 0·5 per cent. of unvaccinated and 2·2 per cent. vaccinated. The remaining 10,876, forming 14·0 per cent. of the total births, comprise 2 returned as having “had small pox,” 410 “insusceptible of vaccination,” and 9,713 “died unvaccinated.”

The latest available official returns, with regard to vaccination, relate to the children born in 1893. The table shows the percentage “unaccounted for” in each Union of the West Riding for each of the *twelve* years 1882–93. Vaccination is not under the control of the sanitary authorities, and the data cannot be given for smaller divisions than Unions.

West Riding Rainfall, 1896.

The following data as to the rainfall in the West Riding during 1896 are taken from “British Rainfall,” published by Mr. G. J. Symons, *F.R.S.*, to whom I am indebted for permission to quote the figures. They are here arranged according to Sanitary Districts, grouped in Unions. Where more than two records are available for one district, only the highest and lowest readings are inserted.

Union and Sanitary District.	Height (in feet) above Sea level.	1896.	
		Rainfall in inches.	Wet days (0·01 inch rainfall).
Barnsley Union—			
Barnsley Borough (3) ...	317 to 350	21·59 to 25·86	125 to 196
Barnsley R., <i>Stainborough</i> ...	520	27·20	164
Hoyland Nether ...	181	22·75	159
“ ...	330	22·48	142
Worsborough ...	225	23·05	152
Bishopthorpe Union ...	No information		
Bramley Union ...	No information		
Clitheroe Union—			
Bowland R. (7) ...	450 to 1540	48·30 to 73·24	156 to 198
Dewsbury Union—			
Batley Borough ...	492	23·60	
Mirfield ...	200	26·46	172
Doncaster Union—			
Doncaster Borough (3) ...	32 to 46	20·00 to 22·87	160 to 173
Doncaster R. (4) ...	17 to 190	22·16 to 24·90	191 to 200
Tickhill ...	61	23·02	162
Goole Union—			
Goole ...	18	22·54	168
Goole R., <i>Swinefleet</i> ...		25·98	140
Great Ouseburn Union—			
Great Ouseburn R., <i>Ribston</i> ..	130	21·74	111

Union and Sanitary District.	Height (in feet) above Sea level.	1896.	
		Rainfall in inches.	Wet days (0·01 inch rainfall).
Halifax Union—			
Brighthouse ...	380	25·59	153
Halifax R., <i>Norland</i> ...	800	34·52	
Midgley ...	1060	39·04	
„ ...	1350	46·62	
Queensbury ...	1050	34·35	142
Southowram ...	750	29·85	196
Sowerby ...	450	37·90	201
Warley ...	1425	42·42	
Hemsworth Union—			
Hemsworth R., <i>Nostell</i> ...		24·97	148
Holbeck Union ...	No information		
Huddersfield Union—			
Golcar ...	400	35·20	202
Holme ...	861	57·80	
Honley ...	350	30·75	
Linthwaite ...	800	40·30	223
Marsden (7) ...	900 to 1360	30·17 to 46·06	
Meltham (5) ..	514 to 1212	40·36 to 47·73	212
New Mill ...	930	50·20	
Slaithwaite ...	1149	43·64	
„ ...	1149	43·94	
Hunslet Union ...	No information		
Keighley Union—			
Bingley ...	572	25·79	185
Haworth ...	850	34·03	
Keighley Borough ...	380	36·55	195
Keighley R., <i>Morton</i> ...	975	33·99	190
Oakworth ...	1008	42·87	161
Oxenhope (4) ...	875 to 1401	45·46 to 48·41	255
Knaresboro' Union—			
Harrogate Borough (4) ...	344 to 589	26·88 to 30·54	185 to 198
Knaresboro' ...	200	23·86	128
Knaresboro' R., <i>Farnham</i> ...	170	24·14	193
„ <i>Ripley</i> ...	230	27·12	177
Leeds Union—			
Leeds R., <i>Roundhay</i> ...	400	27·73	178
North Bierley Union—			
Clayton ...	982	35·22	206
Denholme (4) ...	810 to 1075	40·01 to 48·78	225 to 263
Shipley ...	500	28·64	160
Wilsden ...	700	43·16	211
„ ...	701	41·19	211

Union and Sanitary District.	Height (in feet) above Sea level	1896.	
		Rainfall in inches.	Wet days (0·01 inch rainfall).
Pateley Bridge Union—			
Pateley Bridge R. (10) ...	410 to 1470	36·54 to 50·22	142 to 218
Penistone Union—			
Gunthwaite ...	853	34·72	185
Penistone R. (5) ...	340 to 1358	26·54 to 45·95	167
Thurlstone (7) ...	717 to 1244	32·67 to 50·29	177 to 209
Pontefract Union—			
Methley ...	98	26·49	157
Ripon Union—			
Ripon City ...	120	23·93	165
Ripon City ...	572	37·47	155
Ripon R. (5) ...	225 to 859	26·79 to 33·93	153 to 185
Rotherham Union—			
Rotherham Borough ...	262	21·31	164
Rotherham R. (5) ...	117 to 360	21·50 to 23·90	114 to 190
Wath-upon-Deane ...	185	20·29	169
Saddleworth Union—			
Saddleworth R. (8) ...	630 to 1414	35·42 to 54·40	
Selby Union ...	No information		
Settle Union—			
Settle R. (7) ...	510 to 1296	38·28 to 58·00	171 to 214
Sheffield Union ...	No information		
Skipton Union—			
Silsden ...	560	27·93	173
Silsden ...	760	29·02	173
Skipton ...	360	32·06	184
Skipton R. (18) ...	459 to 1661	28·72 to 65·96	187 to 238
Tadcaster Union—			
Tadcaster R., <i>South Milford</i> ...	70	22·35	182
Thorne Union ...	No information		
Todmorden Union—			
Hebden Bridge ...	479	42·79	198
Mytholmroyd ...	500	38·45	190
Todmorden R. (3) ...	875 to 1380	39·87 to 50·56	223
Wakefield Union—			
Wakefield City ...	96	25·06	143
Wakefield R. (3) ...	140 to 235	20·22 to 25·54	137 to 183
Wetherby Union ...	No information		

Union and Sanitary District.	Height (in feet) above Sea level.	1896.	
		Rainfall in inches.	Wet days (0·01 inch rainfall).
Wharfedale Union—			
Horsforth ...	250	34·55	193
„ ...	304	28·93	
Ilkley (3) ...	331 to 600	33·96 to 34·86	118 to 159
Wharfedale R. (13) ...	139 to 636	26·27 to 35·22	162 to 215
Wortley Union—			
Wortley R., <i>Wortley</i> ...	548	26·27	190

From the same source it appears that the rainfall in the five West Riding County Boroughs was as shown below.

Union and Sanitary District.	Height (in feet) above Sea level.	1896.	
		Rainfall in inches.	Wet days (0·01 inch rainfall).
Bradford (8) ...	395 to 645	26·57 to 36·09	180 to 209
Halifax (7) ...	500 to 1375	30·34 to 47·95	173 to 196
Huddersfield (3) ...	350 to 1090	27·91 to 35·73	191 to 193
Leeds (10) ...	72 to 418	22·68 to 29·10	133 to 195
Sheffield (12) ...	188 to 1110	23·03 to 39·41	168 to 211

TABLE I. Area, Population, Births, Deaths.

SANITARY DISTRICT. <i>In Districts marked by an asterisk the rates are calculated after correction for non-residents.</i>	MEDICAL OFFICER OF HEALTH. <i>(Those whose names are printed in italics have ceased to hold Office.)</i>	AREA (Acres)	POPULATION 1896	BIRTHS.		DEATHS.		ANNUAL RATES per thousand of Estimated Population.					Infant Mortality (Deaths under one year per 1000 Births.)		
				Males	Fe- males	Total	Males	Fe- males	Total	Birth Rate	Death Rate	Zymo- tic Rate		Pneumonia Rate	Respiratory Rate
I. URBAN.															
Altofts ..	W. S. Mackenzie, L.R.C.P., L.R.C.S.	1837	4163	74	73	147	29	32	61	35.3	14.7	1.9	0.2	3.4	143
Ardley* ..	J. Townsley, M.B., C.M.	1259	5258	140	108	248	71	60	131	47.1	19.8	3.8	1.0	5.3	161
Ardley, East and West ..	B. G. Ewing, M.B., C.M.	3836	6840	118	140	258	55	58	113	37.7	16.5	2.0	1.2	3.1	174
Baildon ..	A. Macvie, M.D.	2605	5981	64	83	147	39	43	82	24.6	13.7	1.3	1.2	2.2	54
Bally-cum-Hexthorpe*	J. Mitchell Wilson, M.D., D.P.H.	1613	4796	105	85	190	34	34	68	39.6	14.4	2.9	1.0	2.9	142
Barkland ..	John Hoyle, M.B., C.M.	2421	1799	22	35	57	7	11	18	33.4	10.5	nil	1.8	1.2	105
Barnoldswick ..	F. E. Atkinson, L.R.C.P., M.R.C.S.	2129	4186	75	86	161	40	40	80	38.5	19.1	2.0	1.0	4.3	137
Barnsley Borough*	M. T. Sadler, M.D.	2386	38800	685	717	1402	414	409	823	30.1	20.4	4.0	1.9	4.2	185
Batley Borough*	J. A. Friskine Stuart, L.R.C.P.	2639	29414	452	435	887	299	302	601	30.1	21.6	4.2	2.2	3.8	181
Bingley ..	J. W. Craig, M.D.	987	9416	116	123	239	68	76	144	25.4	15.3	1.9	0.7	3.1	121
Birkenshaw ..	G. R. MacGregor, M.D.	8276	5602	85	82	167	52	47	99	29.8	17.7	0.7	1.6	3.0	108
Birstal ..	R. Forsyth, M.D.	925	2479	42	33	75	20	25	45	30.2	18.2	0.8	0.8	2.8	200
Brighouse Borough*	R. Forsyth, M.D.	1233	6406	125	102	227	71	44	115	35.4	17.9	2.5	0.8	2.9	115
Burley-in-Wharfedale*	M. Young, M.B., C.M.	2224	22979	274	273	547	185	161	346	23.8	15.7	1.5	1.7	3.4	141
Calverley ..	H. Hebblethwaite, M.R.C.S.	3133	2721	38	38	76	22	26	44	27.9	17.3	0.4	1.5	4.0	158
Castleford ..	C. E. Hollings, L.R.C.P., L.R.C.S.	2113	2685	19	27	46	23	14	37	17.1	13.8	0.4	1.5	4.1	152
Castleford ..	E. W. Kemp, M.R.C.S.	564	16512	277	283	560	126	109	235	33.9	14.2	1.2	1.0	1.8	162
Clayton*	G. H. Oliver, L.R.C.P.	1464	4935	61	52	113	74	42	116	20.9	12.0	1.4	1.2	1.8	155
Clayton West ..	D. A. MacGregor, M.B., C.M.	1140	1611	21	22	43	13	11	24	26.7	14.9	nil	1.2	2.2	232
Cleckheaton*	C. H. Dyer, M.B., C.M.	1755	12666	154	184	338	93	92	185	26.8	14.6	1.3	1.0	2.2	154
Darfield *	R. F. Castle, M.B.	2017	3930	?	?	173	?	?	?	44.0	16.5	5.1	2.0	3.0	133
Darton ..	W. White, L.R.C.P., L.R.C.S.	4358	7602	244	254	498	64	67	131	65.5	17.2	2.5	0.2	3.5	84
Denby-and-Cumbarworth ..	D. A. MacGregor, M.B., C.M.	4390	3237	49	45	94	31	15	46	29.0	14.2	0.9	nil	2.2	106
Denholme ..	J. Jackson, F.R.C.S., L.R.C.P.	2540	3684	41	42	73	32	26	58	23.7	18.8	1.3	3.2	4.2	164
Dewsbury Borough*	W. F. Watts, M.R.C.S.	1468	29958	?	?	748	?	?	?	719	25.0	20.7	3.4	1.7	213
Dodworth ..	H. Knowles, L.R.C.P.	1916	3169	74	67	141	50	39	89	44.5	28.1	4.1	1.3	8.2	298
Doncaster Borough*	J. Mitchell Wilson, M.D., D.P.H.	1691	28871	475	406	881	273	212	485	30.5	16.7	1.6	1.0	2.9	140
Drighlington ..	Robert Forsyth, M.D.	1136	4380	68	58	126	44	32	76	28.8	17.3	0.9	0.9	5.0	206
Eckshill*	J. Pitney Aston, L.S.A.	1220	8440	113	117	230	58	59	117	27.2	14.1	1.3	1.1	2.4	104
Elland ..	R. N. Denning, M.D., B.A.	1992	11028	115	125	240	70	73	143	21.8	13.0	1.2	1.2	3.1	104
Emley ..	H. F. Milligan, L.R.C.P.	3556	1471	21	25	46	13	11	24	31.3	16.3	nil	1.4	4.7	130
Farnley Tyas ..	W. P. T. Daniel, L.R.C.P., D.P.H.	1785	501	6	7	13	3	4	7	22.0	11.8	nil	5.1	23.1	231
Farsley ..	F. W. Lambert, L.R.C.P.	814	5867	78	63	141	31	42	73	24.0	12.4	1.4	1.7	1.7	121
Fatherstone ..	A. Bunce, M.B., C.M.	4429	8555	234	229	463	103	75	178	54.1	20.8	0.6	0.6	4.1	192
Flockton ..	J. A. Smith, M.R.C.S.	1108	1231	17	14	31	11	14	25	25.2	20.3	0.8	4.9	7.3	194
Gildersome ..	J. B. Bereton, L.R.C.P., L.R.C.S.	993	3930	27	43	70	36	29	65	23.1	21.4	1.0	1.3	4.3	171
Golecar ..	A. G. Webster, M.R.C.S.	1593	9980	137	101	238	82	77	159	23.8	15.9	1.6	1.0	2.4	181
Goole*	H. O. Steele, M.R.C.S.	1096	3884	47	35	82	26	23	49	21.1	12.6	1.8	0.3	2.8	110
Greasborough ..	J. Mitchell Wilson, M.D., D.P.H.	1441	18938	314	321	635	142	146	288	33.5	14.6	2.0	1.1	2.6	151
Greethwaite ..	J. F. Cheeswright, L.R.C.P., M.R.C.S.	2412	3389	51	56	107	32	25	57	31.6	16.8	3.2	0.3	4.1	112
Guiseley*	J. Brown, L.R.C.P., L.R.C.S.	641	4345	47	45	92	26	31	57	27.2	13.1	1.2	1.2	1.6	119
Handsworth ..	W. H. Cheetham, M.D., D.P.H.	1554	4290	60	68	128	30	35	65	29.8	15.1	1.9	1.0	0.5	164
Hanworth ..	D. A. MacGregor, M.B., C.M.	2957	381	7	6	13	6	5	11	34.1	28.9	5.2	2.6	13.1	308
Hebden Bridge*	A. W. Scott, M.D.	3638	12036	235	216	451	95	92	187	37.4	15.5	2.5	0.7	3.2	160
Heckmondwike*	W. J. C. Ward, L.R.C.P., M.R.C.S.	1268	17023	141	147	288	110	112	222	16.9	10.7	0.7	0.9	1.8	160
Hipperholme ..	F. E. Atkinson, L.R.C.P., M.R.C.S.	2234	7879	93	91	184	51	57	108	23.3	13.7	1.0	2.3	3.8	92
Holbe	H. T. Broughton, M.R.C.S.	478	7399	71	85	156	42	65	107	21.1	15.0	1.2	1.1	3.6	141
Holmfirth ..	R. H. Trotter, M.B.	1138	3525	33	38	71	35	27	62	20.1	17.6	2.0	0.9	2.4	267
Honley*	R. H. Trotter, M.B.	3390	515	1	4	5	3	6	9	9.7	17.5	nil	1.7	6.0	600
Horsforth ..	R. H. Trotter, M.B.	2435	5086	57	43	100	67	50	117	17.6	15.1	1.8	1.8	3.9	240
Hoyland Nether*	B. Kemp, M.R.C.S.	1279	7534	82	82	164	51	37	88	27.2	14.6	1.5	0.8	3.8	171
Hoylandwaine ..	J. Nightingale, M.B.	2801	7334	110	116	226	40	53	93	30.0	12.5	1.1	1.5	0.8	88
Hunsworth ..	W. L. Allott, M.R.C.S.	2085	11685	279	245	524	103	101	204	44.9	17.5	2.5	0.9	3.0	135
Ilkley*	F. McDonald Swallow, L.R.C.P.	2024	600	7	9	16	3	8	11	26.7	18.3	nil	1.7	8.3	125
Keighley Borough*	G. H. Moorhead, L.R.C.P.	1380	1343	22	19	41	12	20	30.5	14.9	1.5	1.5	1.5	1.5	98
Kirkburton ..	R. Honeyburne, M.D.	1689	7381	91	88	179	51	38	89	24.2	12.2	0.9	1.4	2.8	112
Kirkheaton ..	T. Johnstone, M.D.	3822	6388	70	69	139	36	55	91	21.7	11.4	0.5	1.6	0.8	101
Knaresborough ..	W. Scatteray, M.B., C.M.	3670	38423	563	593	1156	346	349	695	30.1	17.5	1.5	1.5	3.6	

Doncaster Borough*	J. Mitchell Wilson, M.D., D.P.H.	1091	2881	475	400	881	273	212	403	383	173	09	09	50	206
Drighlington	Robert Forsyth, M.D.	1136	4380	68	58	126	44	32	76	288	173	09	09	50	206
Eccleshill*	J. Pitney Aston, L.S.A.	1220	8440	113	117	230	58	59	117	272	141	13	13	24	194
Elland	R. N. Denning, M.D., B.A.	1992	11028	115	125	240	70	73	143	218	130	12	12	31	104
Emley	W. Milligan, L.R.C.P.	3556	1471	21	25	46	13	11	24	313	163	nil	14	47	130
Farnley Tyas	W. P. T. Daniel, L.R.C.P., D.P.H.	1785	591	6	7	13	3	4	7	220	118	nil	nil	51	231
Farsley	F. W. Lambert, L.R.C.P.	814	5867	78	63	141	31	42	73	240	124	14	14	17	121
Featherstone	A. Buncle, M.B., C.M.	4429	8555	234	229	463	103	75	178	541	208	26	06	41	192
Flockton	J. A. Smith, M.R.C.S.	1108	1231	17	14	31	11	14	25	252	203	08	49	73	194
Gildersome	J. B. Brereton, L.R.C.P., L.R.C.S.	993	3030	27	43	70	36	29	65	231	214	10	13	43	171
Golcar	A. G. Webster, M.R.C.S.	1593	9980	137	101	238	82	77	159	238	159	16	10	24	181
Gomersal	H. O. Steele, M.R.C.S.	1096	3884	47	35	82	26	23	49	211	126	18	03	28	110
Goole*	J. Mitchell Wilson, M.D., D.P.H.	1441	18938	314	321	635	142	146	288	335	146	20	11	26	151
Greasborough	J. F. Cheesewright, L.R.C.P., M.R.C.S.	2412	3389	51	56	107	32	25	57	316	168	32	03	41	112
Greetland*	J. Brown, L.R.C.P., L.R.C.S.	641	4345	47	45	92	26	31	57	212	131	12	12	16	119
Guiseley*	W. H. Cheetham, M.D., D.P.H.	1554	4290	60	68	128	30	35	65	298	151	19	19	05	164
Gunthwaite	D. A. MacGregor, M.B., C.M.	2057	381	7	6	13	6	5	11	341	289	52	26	131	308
Handsworth	A. W. Scott, M.D.	3638	12036	235	216	451	95	92	187	374	155	25	07	32	160
Harrogate Borough*	W. J. C. Ward, L.R.C.P., M.R.C.S.	1268	17023	141	147	288	110	112	222	169	107	07	09	18	160
Haworth	F. E. Atkinson, L.R.C.P., M.R.C.S.	2234	7879	93	91	184	51	57	108	233	137	10	23	38	92
Hebden Bridge*	J. Lawson, M.B., B.A.	478	7399	71	85	156	42	65	107	211	150	12	11	36	141
Heckmondwike*	H. T. Broughton, M.R.C.S.	697	9941	129	127	256	95	86	181	258	191	36	08	22	176
Hipperholme	R. Davidson, M.D.	1138	3525	33	38	71	35	27	62	201	176	20	09	34	267
Holme	R. H. Trotter, M.B.	3390	515	1	4	5	3	6	9	97	175	nil	nil	19	600
Holmfirth	R. H. Trotter, M.B.	7770	10214	120	128	248	61	61	122	243	119	06	14	25	89
Honley*	R. H. Trotter, M.B.	2435	5686	57	43	100	67	50	117	176	151	18	18	39	240
Horbury	B. Kemp, M.R.C.S.	1279	6030	82	82	164	51	37	88	272	146	15	08	28	171
Horsforth*	J. Nightingale, M.B.	2801	7534	110	116	226	40	53	93	300	125	11	15	08	88
Hoyland Nether*	W. L. Allott, M.R.C.S.	2085	11685	279	245	524	103	101	204	449	175	25	09	30	135
Hoylandswaine	F. McDonald Swallow, L.R.C.P.	2024	600	7	9	16	3	8	11	267	183	nil	17	83	125
Hunsworth	G. H. Moorhead, L.R.C.P.	1380	1343	22	19	41	8	12	20	305	149	15	15	15	98
Idle*	R. Honeyburne, M.D.	1689	7381	91	88	179	51	38	89	242	122	09	14	28	112
Ilkley*	T. Johnstone, M.D.	3822	6388	70	69	139	36	55	91	217	114	05	16	08	101
Keighley Borough*	W. Scatterty, M.B., C.M.	3670	38423	563	593	1156	346	349	695	301	175	15	15	36	163
Kirkburton	R. F. Shaw, L.R.C.P.	1286	3029	32	33	65	31	23	54	215	178	03	17	36	138
Kirkheaton	W. T. Smith, M.R.C.S.	1674	2574	36	21	57	17	23	40	221	155	23	04	35	70
Knarborough	I. D. Mackay, M.B., C.M.	470	4475	74	73	147	51	61	94	328	210	09	18	37	109
Knottingley*	T. Percival, M.R.C.S.	1481	5622	123	112	235	28	19	112	418	208	18	14	46	187
Lepton	W. T. Smith, M.R.C.S., L.R.C.S.	1863	2773	25	30	55	55	54	47	198	169	07	36	25	109
Linthwaite	A. G. Webster, M.R.C.S.	1320	7003	93	82	175	55	54	109	250	156	14	11	31	143
Liversedge	R. H. Shaw, M.R.C.S.	2120	14172	220	202	423	148	147	205	208	208	40	14	20	227

TABLE II. Deaths at certain Ages and from certain specified Causes.

DEATHS AT SUBJOINED AGES.										DEATHS FROM SUBJOINED CAUSES.												
SANTARY DISTRICT.																						
I. URBAN.																						
Under 1 Year	1 and under 5	5 and under 15	15 and under 25	25 and under 65	65 and upwards	Small Pox	Scarlet Fever	Diphtheria	Croup	Typhus	Enteric	Continued	Puerperal	Erysipelas	Measles	Whooping Cough	Diarrhoea	Rheumatic Fever	Phthisis	Pneumonia & Pleurisy	Heart Disease	Injuries
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
21	8	2	4	17	9	-	-	-	-	-	-	1	1	-	4	2	1	-	1	14	2	4
40	30	10	5	35	11	-	-	-	-	-	7	-	-	-	-	3	9	-	5	28	8	4
45	12	3	8	26	19	-	-	-	-	-	2	-	-	-	-	2	4	-	8	12	4	6
8	7	3	5	25	29	-	-	-	-	-	-	-	-	-	-	-	-	-	1	7	13	9
27	11	5	1	8	16	-	-	-	-	-	4	-	-	-	-	5	2	-	5	9	4	-
6	2	1	2	7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	3	-
22	9	9	2	17	21	-	-	-	-	-	-	-	-	-	-	-	-	-	4	18	6	-
259	146	44	34	207	133	-	-	-	-	-	6	-	4	3	19	48	41	2	72	104	47	37
159	123	30	27	173	80	-	-	-	-	-	10	-	2	-	67	17	19	4	64	113	37	7
20	24	8	6	49	28	-	-	-	-	-	1	-	-	-	-	14	1	1	7	29	12	-
18	11	5	10	33	22	-	-	-	-	-	-	-	-	-	-	-	-	-	9	22	3	1
15	1	1	1	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	2	7	1	-
26	20	2	5	33	29	-	-	-	-	-	3	-	1	-	8	4	-	-	5	18	5	1
77	43	11	24	114	77	-	-	-	-	-	2	-	-	2	16	6	7	2	40	78	26	11
12	2	1	3	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11	5	2
7	2	1	2	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	2	2
91	38	8	10	59	29	-	-	-	-	-	1	-	-	1	3	-	8	-	17	29	11	10
15	1	1	1	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	5	1
26	20	2	5	33	29	-	-	-	-	-	3	-	1	-	8	4	-	-	5	18	5	1
77	43	11	24	114	77	-	-	-	-	-	2	-	-	2	16	6	7	2	40	78	26	11
12	2	1	3	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11	5	2
7	2	1	2	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	2	2
91	38	8	10	59	29	-	-	-	-	-	1	-	-	1	3	-	8	-	17	29	11	10
15	1	1	1	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	5	1
26	20	2	5	33	29	-	-	-	-	-	3	-	1	-	8	4	-	-	5	18	5	1
77	43	11	24	114	77	-	-	-	-	-	2	-	-	2	16	6	7	2	40	78	26	11
12	2	1	3	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11	5	2
7	2	1	2	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	2	2
91	38	8	10	59	29	-	-	-	-	-	1	-	-	1	3	-	8	-	17	29	11	10
15	1	1	1	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	5	1
26	20	2	5	33	29	-	-	-	-	-	3	-	1	-	8	4	-	-	5	18	5	1
77	43	11	24	114	77	-	-	-	-	-	2	-	-	2	16	6	7	2	40	78	26	11
12	2	1	3	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11	5	2
7	2	1	2	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	2	2
91	38	8	10	59	29	-	-	-	-	-	1	-	-	1	3	-	8	-	17	29	11	10
15	1	1	1	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	5	1
26	20	2	5	33	29	-	-	-	-	-	3	-	1	-	8	4	-	-	5	18	5	1
77	43	11	24	114	77	-	-	-	-	-	2	-	-	2	16	6	7	2	40	78	26	11
12	2	1	3	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11	5	2
7	2	1	2	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	2	2
91	38	8	10	59	29	-	-	-	-	-	1	-	-	1	3	-	8	-	17	29	11	10
15	1	1	1	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	5	1
26	20	2	5	33	29	-	-	-	-	-	3	-	1	-	8	4	-	-	5	18	5	1
77	43	11	24	114	77	-	-	-	-	-	2	-	-	2	16	6	7	2	40	78	26	11
12	2	1	3	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11	5	2
7	2	1	2	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	2	2
91	38	8	10	59	29	-	-	-	-	-	1	-	-	1	3	-	8	-	17	29	11	10
15	1	1	1	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	5	1
26	20	2	5	33	29	-	-	-	-	-	3	-	1	-	8	4	-	-	5	18	5	1
77	43	11	24	114	77	-	-	-	-	-	2	-	-	2	16	6	7	2	40	78	26	11
12	2	1	3	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11	5	2
7	2	1	2	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	2	2
91	38	8	10	59	29	-	-	-	-	-	1	-	-	1	3	-	8	-	17	29	11	10
15	1	1	1	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	5	1
26	20	2	5	33	29	-	-	-	-	-	3	-	1	-	8	4	-	-	5	18	5	1
77	43	11	24	114	77	-	-	-	-	-	2	-	-	2	16	6	7	2	40	78	26	11
12	2	1	3	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11	5	2
7	2	1	2	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	2	2
91	38	8	10	59	29	-	-	-	-	-	1	-	-	1	3	-	8	-	17	29	11	10
15	1	1	1	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	5	1
26	20	2	5	33	29	-	-	-	-	-	3	-	1	-	8	4	-	-	5	18	5	1
77	43	11	24	114	77	-	-	-	-	-	2	-	-	2	16	6	7	2	40	78	26	11
12	2	1	3	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11	5	2
7	2	1	2	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	2	2
91	38	8	10	59	29	-	-	-	-	-	1	-	-	1	3	-	8	-	17	29	11	10
15	1	1	1	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	5	1
26	20	2	5	33	29	-	-	-	-	-	3	-	1	-	8	4	-	-	5	18	5	1
77	43	11	24	114	77	-	-	-	-	-	2	-	-	2	16	6	7	2	40	78	26	11
12	2	1	3	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11	5	2
7	2	1	2	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	2	2
91	38	8	10	59	29	-	-	-	-	-	1	-	-	1	3	-	8	-	17	29	11	10
15	1	1	1	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	5	1
26	20	2	5	33	29	-	-	-	-	-	3	-	1	-	8	4	-	-	5	18	5	1
77	43	11	24	114	77	-	-	-	-	-	2	-	-	2	16	6	7	2	40	78	26	11
12	2	1	3	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11	5	2
7	2	1	2	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	2	2
91	38	8	10	59	29	-	-	-	-	-	1	-	-	1	3	-	8	-	17	29	11	10
15	1	1	1	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	5	1
26	20	2	5	33	29	-	-	-	-	-	3	-	1	-	8	4	-	-	5	18	5	1
77	43	11	24	114	77	-	-	-	-	-	2	-	-	2	16	6	7	2	40	78	26	11
12	2	1	3	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11	5	2
7	2	1	2	9	10	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	2	2
91	38	8	10	59	29	-	-	-	-	-	1	-	-	1	3	-	8	-	17	29	11	10
15	1	1	1	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	5	18	5	1
26	20	2	5	33	29	-	-	-	-	-	3	-	1	-	8	4	-	-	5	18	5	1
77	43	11	24	114	77	-	-	-	-	-	2	-	-	2	16	6	7	2	40	78	26	11
12	2	1	3	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-				

Doncaster Borough ..	70	20	17	142	113	5	10	2	-	-	-	-	-	-	-	-	-	-	3	14	3	-	-	-	31	85	40	14
Drighlington ..	8	3	5	23	11	1	-	1	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	4	22	8	1
Eccleshill ..	12	11	6	30	34	1	-	1	-	-	-	-	-	-	-	-	-	-	-	1	3	-	-	-	9	17	17	1
Elland ..	13	7	10	50	38	2	2	-	-	-	-	-	-	-	-	-	-	-	-	1	3	-	-	-	13	7	3	3
Emley ..	-	-	2	8	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2
Farnley Tyas ..	-	-	-	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	-
Farsley ..	9	3	-	1	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	6	11	11	-
Featherstone ..	27	9	4	26	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	10	14	14	5
Flockton ..	5	1	6	37	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	35	1	1	-
Gildersome ..	13	7	2	10	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	13	7	7	1
Golcar ..	20	8	7	14	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	10	10	4
Gomersal ..	9	2	-	52	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	11	4	4	2
Goole ..	47	9	-	16	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	51	22	22	13
Greasborough ..	8	4	11	71	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	14	6	6	3
Greetland ..	6	2	6	14	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	2	2	-
Guiseley ..	11	4	3	21	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	1	2	2	-
Gunthwaite ...	5	6	3	16	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	5	5	2
Handsworth ..	2	-	-	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5	5	-
Harrogate Borough ..	43	10	9	37	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	13	13	8
Haworth ..	21	3	10	85	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	30	20	20	8
Hebden Bridge ..	11	1	8	36	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	30	12	12	3
Heckmondwike ..	14	6	4	37	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	27	8	8	3
Hipperholme ..	32	8	7	57	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	22	15	15	-
Holme ..	6	1	2	17	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	12	9	9	-
Holmfirth ..	-	-	-	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-
Honley ..	12	2	6	46	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	21	21	1
Horbury ..	6	1	5	41	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	27	9	9	3
Horsforth ..	8	4	7	26	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	17	11	11	2
Hoyland Nether ..	6	2	9	36	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	6	12	12	7
Hoylandswaine ..	39	11	6	55	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	10	10	3
Hunsworth ..	2	-	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	1
Idle ..	2	-	1	9	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	5	4	4	-
Ilkley ..	8	3	1	24	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	15	15	2
Keighley Borough ..	3	6	11	28	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	5	11	11	1
Kirkburton ..	87	21	38	221	139	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	138	59	59	15
Kirkheaton ..	4	-	3	17	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	3	3	3
Knarsborough ..	4	6	2	6	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	5	5	1
Knottingley ...	8	3	2	24	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	12	10	10	-
Lepton ..	19	1	9	18	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	8	7	7	3
Linthwaite ..	1	-	1	21	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	12	7	7	1
Liversedge ..	14	8	4	36	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	26	4	4	4
	71	20	12	64	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	22	7	7	5

[illegible]